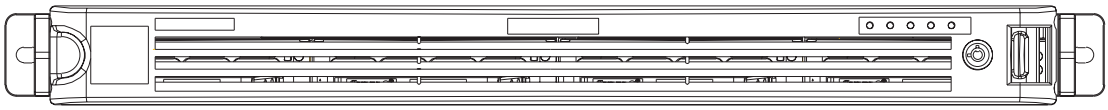
SUPERMICRO®

SUPERSERVER 6014H-32



USER'S MANUAL

1.0

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 6014H-32. Installation and maintainance should be performed by experienced technicians only.

The SuperServer 6014H-32 is a high-end 1U rackmount server based on the SC813T-500 1U rackmount server chassis and the X6DHR-3G2 serverboard, which supports single or dual Intel® Xeon™ processors of up to 3.60 GHz at a Front Side (system) Bus speed of 800 MHz and up to 16 GB of DDR2-400 SDRAM memory.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the SUPER X6DHR-3G2 serverboard and the SC813T-500 chassis, which make up the SuperServer 6014H-32.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 6014H-32 into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer here for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 6014H-32.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the X6DHR-3G2 serverboard, including the locations and functions of connectors, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the 1U SC813T-500 rackmount server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SAS/SATA or peripheral drives and when replacing the system power supply unit and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: BIOS POST Codes

Appendix B: Software Installation

Appendix C: System Specifications

Notes

Table of Contents

Preface

About This Manual iii

Manual Organization iii

Chapter 1: Introduction

1-1 Overview 1-1

1-2 Serverboard Features 1-2

1-3 Server Chassis Features 1-4

1-4 Contacting Supermicro 1-6

Chapter 2: Server Installation

2-1 Overview 2-1

2-2 Unpacking the System 2-1

2-3 Preparing for Setup 2-1

- Choosing a Setup Location 2-2
- Rack Precautions 2-2
- Server Precautions 2-2
- Rack Mounting Considerations 2-3

2-4 Installing the System into a Rack 2-3

- Identifying the Sections of the Rails 2-3
- Installing the Rack Rails 2-4
- Installing the Chassis Rails 2-5
- Installing the Server into the Rack 2-6
- Installing the Server into a Telco Rack 2-7

2-5 Checking the Serverboard Setup 2-8

2-6 Checking the Drive Bay Setup 2-9

Chapter 3: System Interface

3-1 Overview 3-1

3-2 Control Panel Buttons 3-1

- Reset 3-1
- Power 3-1

3-3 Control Panel LEDs 3-2

- Overheat/Fan Fail 3-2
- NIC2 3-2
- NIC1 3-2
- HDD 3-3

Power 3-3
3-4 SAS/SATA Drive Carrier LED 3-3

Chapter 4: System Safety

4-1 Electrical Safety Precautions 4-1
4-2 General Safety Precautions 4-2
4-3 ESD Precautions 4-3
4-4 Operating Precautions 4-4

Chapter 5: Advanced Serverboard Setup

5-1 Handling the Serverboard 5-1
5-2 Processor and Heatsink Installation 5-2
5-3 Connecting Cables 5-4
Connecting Data Cables 5-4
Connecting Power Cables 5-4
Connecting the Control Panel 5-5
5-4 I/O Ports 5-6
5-5 Installing Memory 5-6
5-6 Adding PCI Cards 5-8
5-7 Serverboard Details 5-9
X6DHR-3G2 Layout 5-9
X6DHR-3G2 Quick Reference 5-10
5-8 Connector Definitions 5-11
ATX Power Connection 5-11
PWR_SEC Connection 5-11
Processor Power Connection 5-11
NMI Button 5-11
Power LED 5-11
HDD LED 5-12
NIC1 LED 5-12
NIC2 LED 5-12
Overheat/Fan Fail LED 5-12
Power Fail LED 5-12
Reset Button 5-13
Power Button 5-13
Universal Serial Bus 5-13
Chassis Intrusion 5-13
Serial Ports 5-14
Power Supply Fail Header 5-14
Fan Headers 5-14

Extra USB Headers 5-15
Power LED/Speaker 5-15
ATX PS/2 Keyboard & Mouse Ports 5-15
JLAN 1/2 (Ethernet Ports) 5-15
Wake-On-LAN 5-16
Wake-On-Ring 5-16
SMB 5-16
SMB Power 5-16
5-9 Jumper Settings 5-17
Explanation of Jumpers 5-17
CMOS Clear 5-17
VGA Enable/Disable 5-17
JLAN Enable/Disable 5-18
3rd Power Supply Fail Detect Enable/Disable 5-18
Alarm Reset 5-18
Watch Dog Enable/Disable 5-19
Compact Flash Master/Slave 5-19
SAS Controller Enable/Disable 5-19
5-10 Onboard Indicators 5-20
JLAN1/JLAN2 LEDs 5-20
SAS Activity LED Indicators 5-20
5-11 SATA, Floppy and Hard Drive Connections 5-21
Floppy Connector 5-21
IDE Connectors 5-22
SATA Connectors 5-22

Chapter 6: Advanced Chassis Setup

6-1 Static-Sensitive Devices 6-1
6-2 Control Panel 6-2
6-3 System Fans 6-3
System Fan Failure 6-3
Replacing System Cooling Fans 6-3
6-4 Drive Bay Installation/Removal 6-4
Removing the Front Bezel 6-4
Accessing the Drive Bays 6-5
SAS/SATA Drive Installation 6-6
CD-ROM and Floppy Drive Installation 6-8
6-5 Power Supply 6-9
Power Supply Failure 6-9

Removing/Replacing the Power Supply 6-9

Chapter 7: BIOS

7-1 Introduction 7-1
7-2 Running Setup 7-2
7-3 Main BIOS Setup 7-2
Main BIOS Setup Menu 7-3
7-4 Advanced Setup 7-6
7-5 Security 7-16
7-6 Boot 7-17
7-7 Exit 7-18

Appendices:

Appendix A: BIOS POST Codes A-1
Appendix B: Software Installation B-1
Appendix C: System Specifications C-1

Notes

Chapter 1

Introduction

1-1 Overview

The Supermicro SuperServer 6014H-32 is a high-end dual processor, 1U rackmount server featuring some of the most advanced technology currently available. The SuperServer 6014H-32 is comprised of two main subsystems: the SC813T-500 1U rackmount chassis and the X6DHR-3G2 Xeon dual processor serverboard. Please refer to our web site for information on operating systems that have been certified for use with the SuperServer 6014H-32. (www.supermicro.com)

In addition to the mainboard and chassis, various hardware components may have been included with your SuperServer 6014H-32, as listed below:

- One (1) slim floppy drive [FPD-TEAC-S(B)]
- One (1) slim CD-ROM drive [CDM-TEAC-24(B)]
- Two (2) riser cards (CSE-RR1U-X and CSE-RR1U-XLP)
- Two (2) 10-cm blower fans (FAN-0059)
- SAS (Serial Attached SCSI) and Serial ATA (SATA) Accessories:
  One (1) SAS/SATA backplane (CSE-SATA-813)
  Four (4) SAS/SATA data cables (CBL-0119)
  Four (4) SAS/SATA drive carriers [CSE-PT39(B)]
- Rackmount hardware with screws (CSE-PT51):
  Two (2) rack rail assemblies
  Six (6) brackets for mounting the rack rails to a rack/telco rack
- One (1) CD containing drivers and utilities
- Optional: Two (2) passive 1U CPU heatsinks (SNK-P0009)
  One (1) front bezel [CSE-PTFB-813(B)]
- SuperServer 6014H-32 User's Manual

Note: a "B" at the end of a part number indicates the item is available in black.

1-2 Serverboard Features

At the heart of the SuperServer 6014H-32 lies the X6DHR-3G2 a dual Xeon processor serverboard designed to provide maximum performance. Below are the main features of the X6DHR-3G2. See Figure 1-1 for a system block diagram of the chipset.

Processors

The X6DHR-3G2 supports single or dual 604-pin Intel Xeon processors of up to 3.60 GHz at an 800 MHz FSB. Please refer to our web site for a complete listing of supported processors.

Memory

The X6DHR-3G2 has eight 240-pin DIMM slots that can support up to 16 GB of DDR2-400 SDRAM. The dual-channel memory bus requires memory modules to be installed two at a time.

Serial Attached SCSI/Serial ATA

An Adaptec 9410W SAS/SATA controller is integrated into the X6DHR-3G2 to provide a four-port Serial Attached SCSI/Serial ATA subsystem, which supports RAID levels 0 and 1, 10 and JBOD. The X6DHR-3G2 also has a slot for a LP ZCR daughter card (AOC-SOZCR1) to supply ZCR function. The use of a ZCR card in this slot will also provide RAID 5 support.

Note: The operating system you use must have RAID support to enable the hot-swap capability and RAID function of the SAS/SATA drives.

PCI Expansion Slots

Two riser cards have been included with the server to support PCI expansion. The CSE-RR1U-X riser fits into the 133 MHz PCI-X slot on the X6DHR-3G2 to support a standard size (full-height, full-length) PCI-X add-on card (any speed). The CSE-RR1U-XLP fits into the 100 MHz PCI-X slot to support one low profile (half-height, half-length) PCI-X add-on card (of either 100 or 66 MHz).

An additional two riser cards are available as an option to support add-on cards in the SXB x8 PCI-E slots (CSE-RR1U-EL and CSE-RR1U-ELP).

ATI Graphics Controller

An ATI video controller based on the Rage XL 8 MB graphics chip is integrated onboard the X6DHR-3G2. Rage XL fully supports sideband addressing and AGP texturing. This onboard graphics package can provide a bandwidth of up to 512 MB/sec over a 32-bit graphics memory bus.

Onboard Controllers/Ports

The X6DHR-3G2 provides one floppy drive controller and two onboard IDE controllers, which support up to four hard drives or ATAPI devices. Backpanel I/O ports include one COM port, two USB ports, PS/2 mouse and keyboard ports and a video (monitor) port. An Intel 82546GB Ethernet controller is also included to support two gigabit LAN ports.

Other Features

Other onboard features are included to promote system health. These include various voltage monitors, two CPU temperature sensors, four fan speed sensors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.

1-3 Server Chassis Features

The SC813T-500 is one of Supermicro's third-generation 1U chassis and features four hot-swap SAS/SATA drive bays, a slim CD-ROM drive, a slim 3.5" floppy drive and a revolutionary cooling design that can keep today's most powerful processors running well below their temperature thresholds. The following is a general outline of the main features of the SC813T-500 chassis.

System Power

The SC813T-500 chassis includes a single 500W cold-swap power supply.

SAS/SATA Subsystem

For the 6014H-32, the SC813T-500 chassis was designed to support four SAS or four SATA hard drives, which are hot-swappable units.

Note: The operating system you use must have RAID support to enable the hot-swap capability of the SAS/SATA drives.

Control Panel

The SC813T-500 control panel provides important system monitoring and control information. LEDs indicate power on, network activity, hard disk drive activity and system overheat conditions. Also present are a main power button and a system reset button.

I/O Backplane

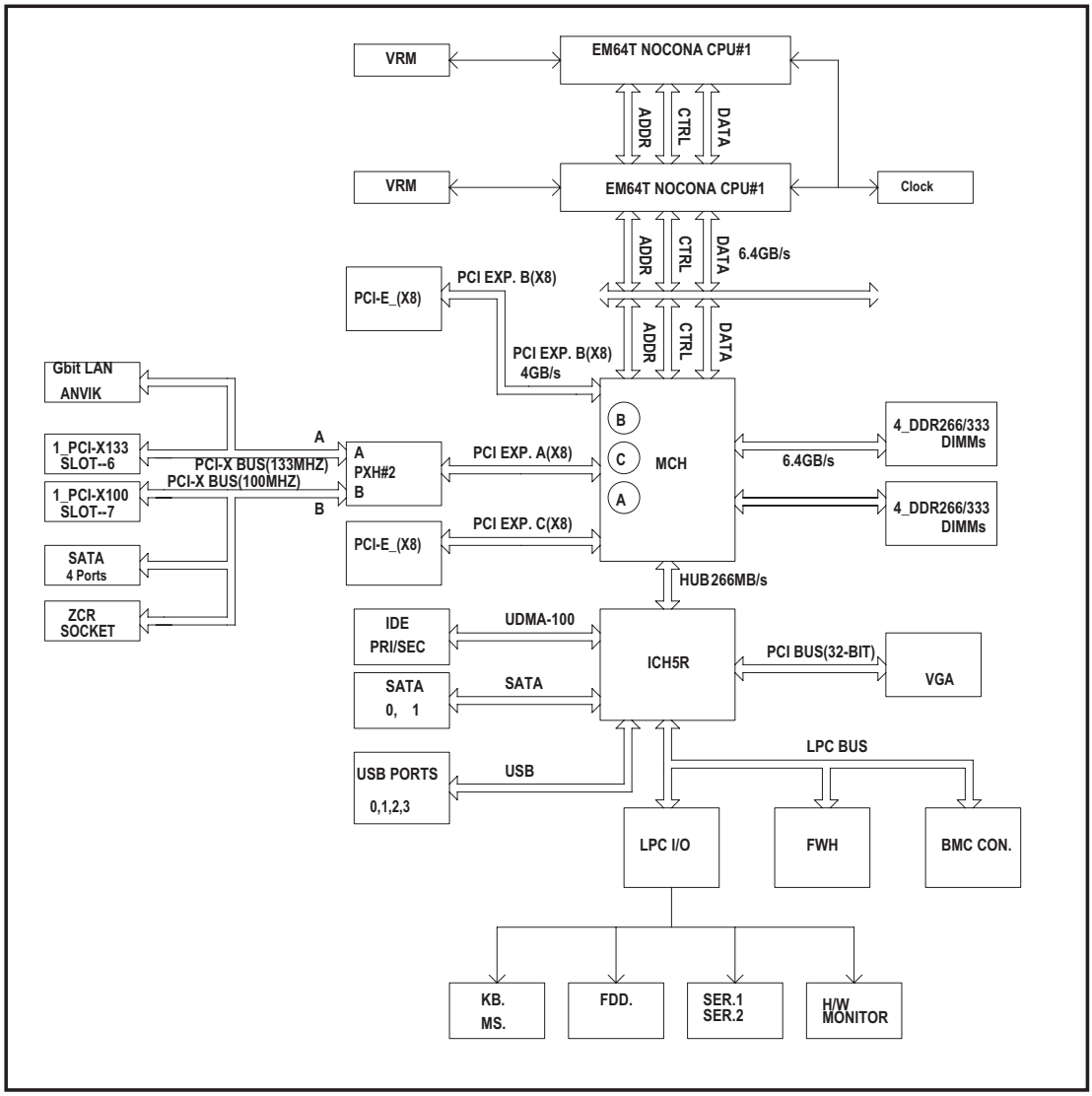
The SC813T-500 is a 1U rackmount chassis. Its I/O backplane provides one full-height full-length and one half-height half-length slots for PCI add-on cards, one COM port (the other is internal), one VGA port, two USB ports, PS/2 mouse and keyboard ports and two Ethernet (LAN) ports.

Cooling System

The SC813T-500 chassis' revolutionary cooling design has been optimized to provide sufficient cooling for dual Xeon configurations. The SC813T-500 includes two heavy duty 10-cm blower fans located in the middle of the chassis. In the event of a fan failure, the ambient air temperature inside the chassis will rise and activate an overheat LED.

Figure 1-1. Intel E7520 Chipset: System Block Diagram

Note: This is a general block diagram. Please see Chapter 5 for details.



1-4 Contacting Supermicro

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980 Rock Ave.
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Tel: +1 (408) 503-8000
Fax: +1 (408) 503-8008
Email: marketing@supermicro.com (General Information)
support@supermicro.com (Technical Support)
Web Site: www.supermicro.com

Europe

Address: SuperMicro Computer B.V.
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's-Hertogenbosch, The Netherlands
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Email: sales@supermicro.nl (General Information)
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Chung-Ho 235, Taipei, Taiwan, R.O.C.
Tel: +886-(2) 8226-3990
Fax: +886-(2) 8226-3991
Web Site: www.supermicro.com.tw
Technical Support:
Email: support@supermicro.com.tw
Tel: 886-2-8228-1366, ext.132 or 139

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 6014H-32 up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your SuperServer 6014H-32 system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a serverboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the System

You should inspect the box the SuperServer 6014H-32 was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the SuperServer 6014H-32. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

The box the SuperServer 6014H-32 was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets, etc.).

Warnings and Precautions!

Rack Precautions

• Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
• In single rack installation, stabilizers should be attached to the rack.
• In multiple rack installations, the racks should be coupled together.
• Always make sure the rack is stable before extending a component from the rack.
• You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions

• Review the electrical and general safety precautions in Chapter 4.
• Determine the placement of each component in the rack *before* you install the rails.
• Install the heaviest server components on the bottom of the rack first, and then work up.
• Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
• Allow the hot plug SAS/SATA drives and power supply units to cool before touching them.
• Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

2-4 Installing the System into a Rack

This section provides information on installing the SuperServer 6014H-32 into a rack unit with the rack rails provided. If the 6014H-32 has already been mounted into a rack, you can skip ahead to Sections 2-5 and 2-6. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

Identifying the Sections of the Rails

You should have received a rack mounting kit with the SuperServer 6014H-32. The kit includes two sets of chassis rails (four pieces total, two of which are already installed on the chassis) and two sets of rack rails (four pieces total). Figure 2-1 displays the two right-side chassis rails and the two right-side rack rails. Note that two of the four chassis rails (Chassis Rail 1) are already attached to the chassis.

Installing the Rack Rails

Begin by joining one set of rack rails corresponding to either the left or the right side of the rack. Do this by aligning the studs of one rail with the holes of the other rail. Push the studs into the grooved holes and then push the rail to slide the studs to the end of the groove. Repeat this with the rack rails used for the other side.
Next, determine where you want to place the SuperServer 6014H-32 in the rack. (See Rack and Server Precautions in Section 2-3.) Position the assembled rack rails at the desired location in the rack. Screw the assembly securely to the rack using the brackets provided. Attach the other assembly to the other side of the rack, making sure both are at the exact same height and with the rail guides facing inward.

Locking Tabs: Both of the two chassis rails on each side have a locking tab (four total), which serves two functions. The first is to lock the server into place when installed and pushed fully into the rack, which is its normal operating position.
Secondly, these tabs also lock the server in place when extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing. The two sets of locking tabs mean there are two locked positions when the chassis is extended from the rack, allowing easy access when servicing the system. Note that on one side, you push the locking tab up to release it and on the other side you push it down to release.

Installing the Chassis Rails

Two of the chassis rails (Chassis Rail 1) should have already been preattached - one to each side of the chassis. Attach the second set of chassis rails (Chassis Rail 2) directly to the chassis with the screws provided. Chassis Rail 2 should be positioned just behind Chassis Rail 1 (see Figure 2-2). Do this for both sides of the chassis.

Figure 2-1. Identifying the Sections of the Rails

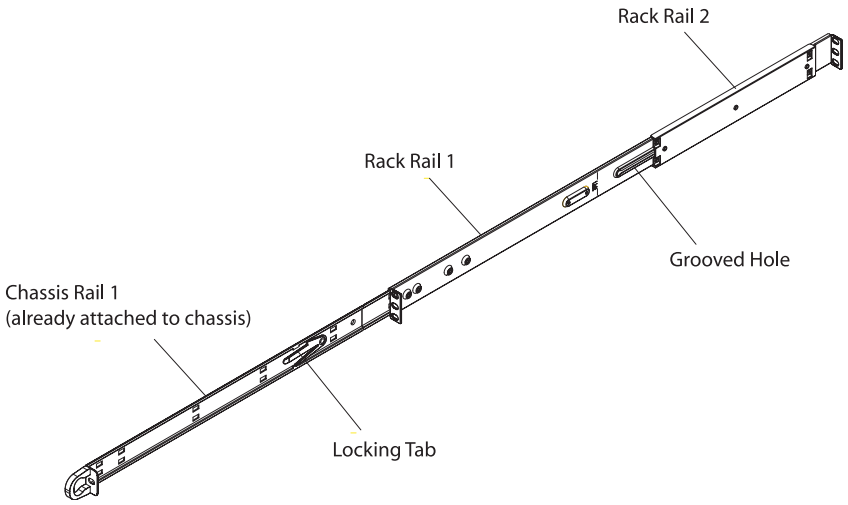
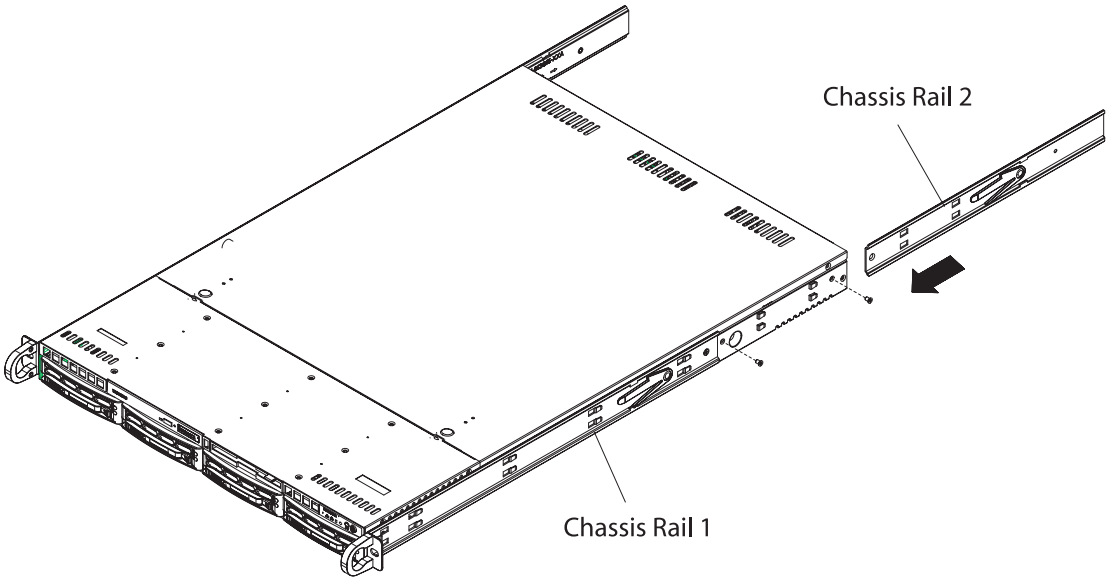


Figure 2-2. Installing Chassis Rails

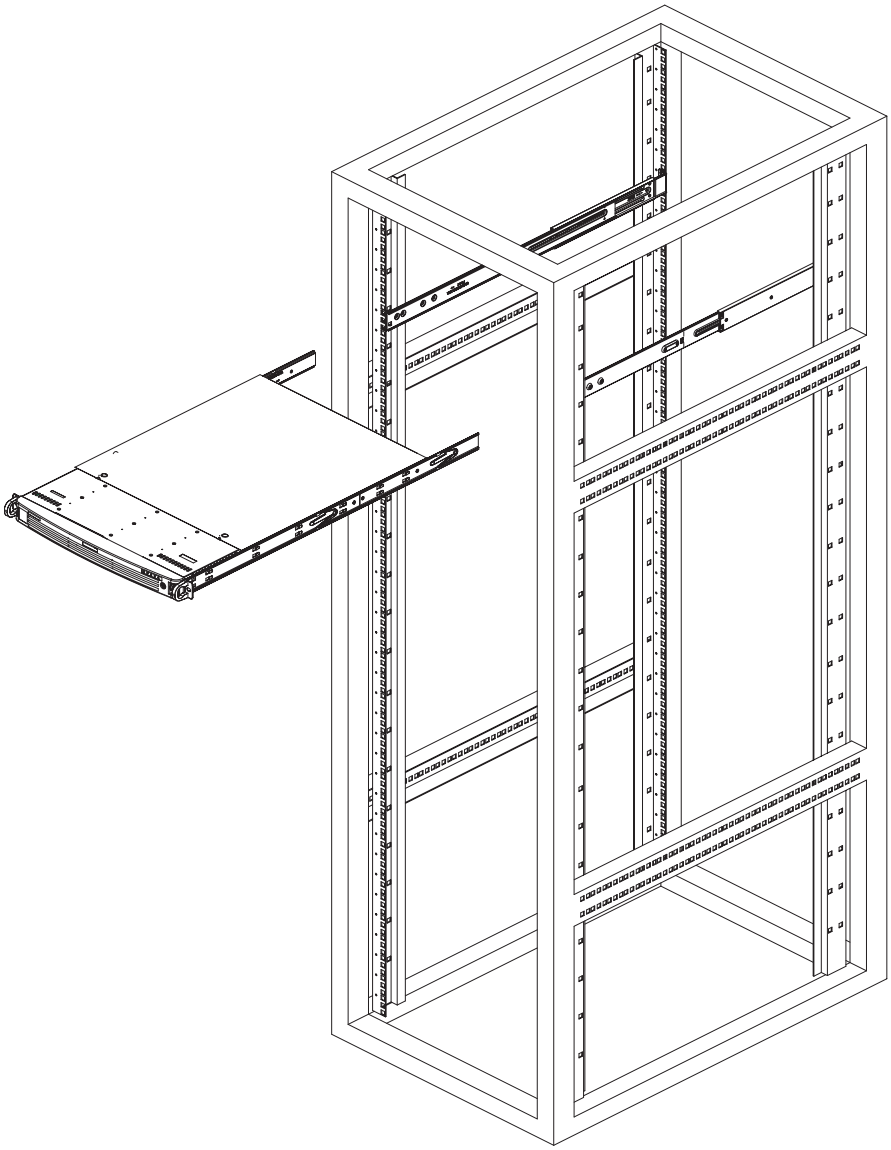


Installing the Server into the Rack

You should now have rails attached to both the chassis and the rack unit. The next step is to install the server into the rack. Do this by lining up the rear of the chassis rails with the front of the rack rails. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). See Figure 2-3.

When the server has been pushed completely into the rack, you should hear the locking tabs "click". Finish by inserting and tightening the thumb screws that hold the front of the server to the rack.

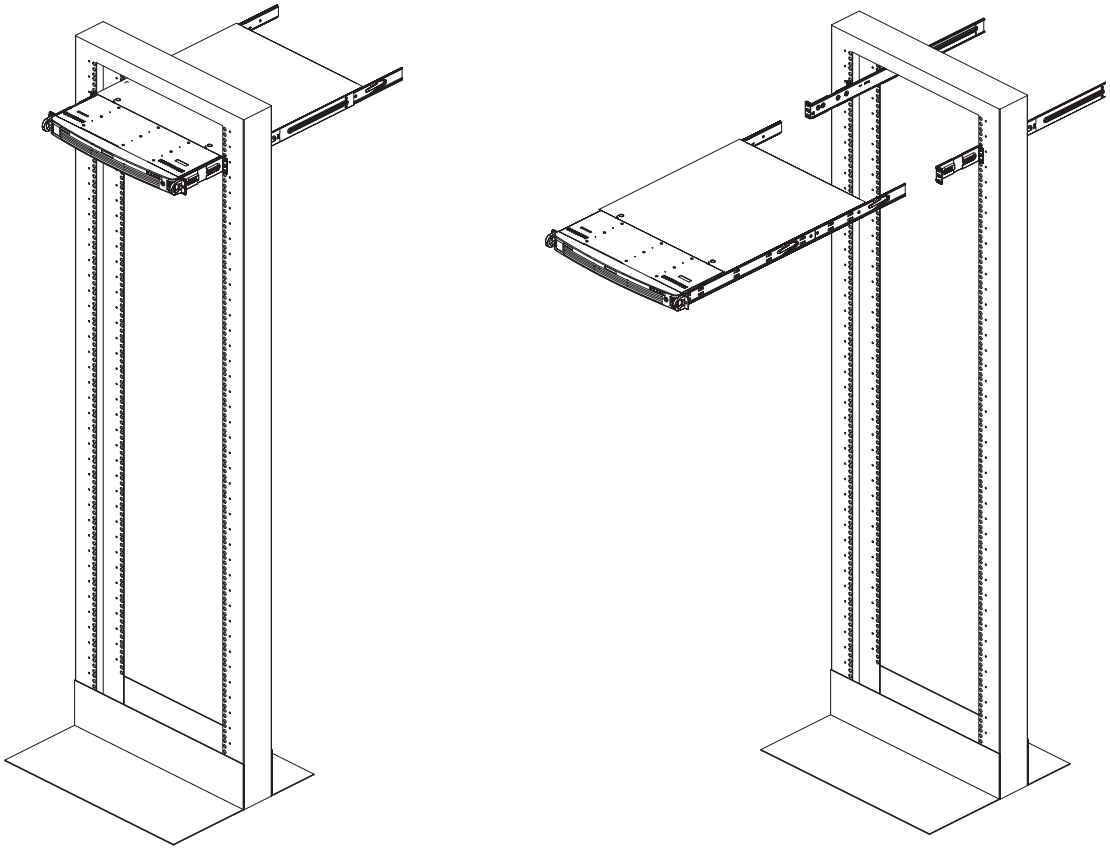
Figure 2-3. Installing the Server into a Rack



Installing the Server into a Telco Rack

If you are installing the SuperServer 6014H-32 into a Telco type rack, follow the directions given on the previous pages for rack installation. The only difference in the installation procedure will be the positioning of the rack brackets to the rack. They should be spaced apart just enough to accommodate the width of the telco rack.

Figure 2-4. Installing the Server into a Telco Rack



2-5 Checking the Serverboard Setup

After you install the 6014H-32 in the rack, you will need to open the unit to make sure the serverboard is properly installed and all the connections have been made.

1. **Accessing the inside of the 6014H-32 (see Figure 2-5)**
   First, release the retention screws that secure the unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, depress the two buttons on the top of the chassis to release the top cover. There is a large rectangular recess in the middle front of the top cover to help you push the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server.

2. **Check the CPUs (processors)**
   You should have one or two processors already installed into the serverboard. Each processor needs its own heatsink. See Chapter 5 for instructions on processor and heatsink installation.

3. **CPU Speed**
   The CPU speed should automatically be detected so you will not need to change any jumpers or settings in the BIOS Setup utility.

4. **Check the system memory**
   Your 6014H-32 server system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.

5. **Installing add-on cards**
   If desired, you can install add-on cards to the system. See Chapter 5 for details on installing PCI add-on cards.

6. **Check all cable connections and airflow**
   Make sure all power and data cables are properly connected and not blocking the chassis airflow. See Chapter 5 for details on cable connections.

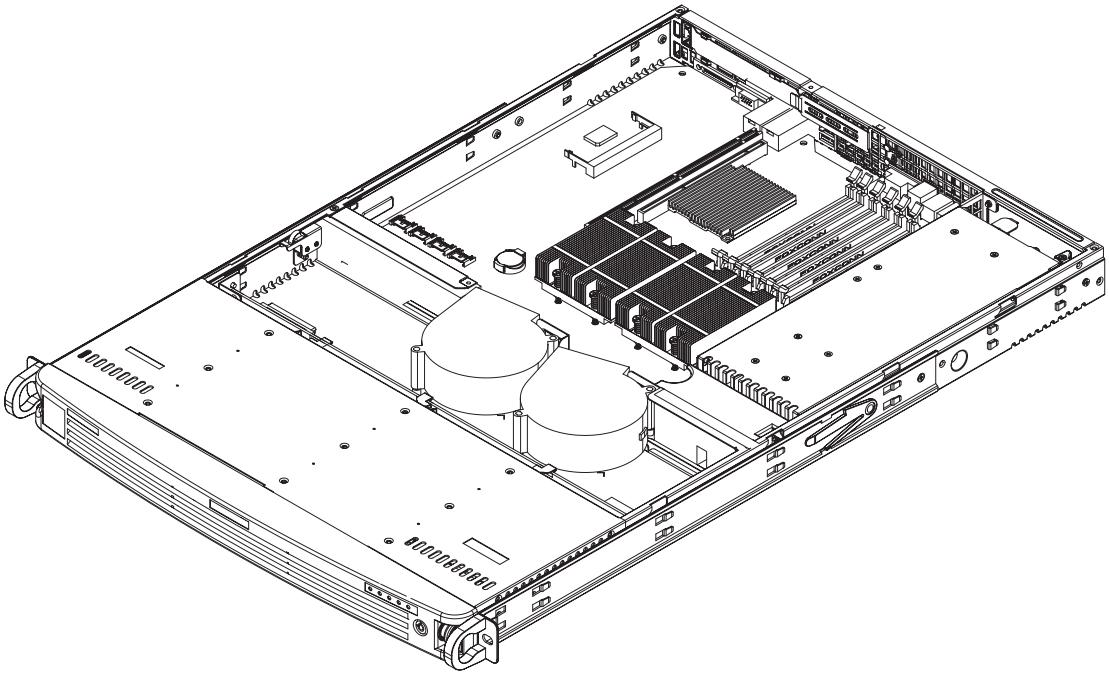


Figure 2-5. Accessing the Inside of the SuperServer 6014H-32 (with optional front bezel shown)

2-6 Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives and the SAS/SATA drives have been properly installed and all connections have been made.

1. **Accessing the drive bays**
   All drives are accessable from the front of the server. For servicing the CD-ROM and floppy drives, you will need to remove the top chassis cover. The SAS/SATA disk drives can be installed and removed from the front of the chassis without removing the top chassis cover or powering down the system.

2. **CD-ROM and floppy disk drives**
   A slim CD-ROM and a floppy drive should be preinstalled in your server. Refer to Chapter 6 if you need to reinstall a CD-ROM and/or floppy disk drive to the system.

3. **Check the SAS/SATA disk drives**
   Depending upon your system's configuration, your system may have one or more drives already installed. If you need to install SAS/SATA drives, please refer to Chapter 6.

4. Check the airflow

Airflow is provided by two heavy duty 10-cm blower fans. The system component layout was carefully designed to direct the airflow to the components that generate the most heat. Note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans.

5. Supplying power to the system

The last thing you must do is to provide power to the system. Plug the power cord from the power supply module into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS). Finish by depressing the power button on the front of the chassis to start the system.

Chapter 3

System Interface

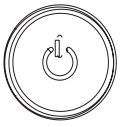
3-1 Overview

There are several LEDs on the control panel as well as others on the SAS/SATA drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also two buttons on the chassis control panel and an on/off switch on the power supply. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

3-2 Control Panel Buttons

There are two push-buttons located on the front of the chassis. These are (in order from left to right) a reset button and a power on/off button.

- **Reset:** Use the reset switch to reboot the system.



- **Power:** The main power switch is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system.

3-3 Control Panel LEDs

The control panel located on the front of th SC813T-500 chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

- **Overheat/Fan Fail:** When this LED flashes it indicates a fan failure. When on continuously (on and not flashing) it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly (see Chapter 5). This LED will remain flashing or on as long as the overheat condition exists.

- **NIC2:** Indicates network activity on GLAN2 when flashing .

- **NIC1:** Indicates network activity on GLAN1 when flashing.

- **HDD:** Indicates IDE channel activity. On the SuperServer 6014H-32 this light indicates SAS/SATA and/or CD-ROM drive activity when flashing.

- **Power:** Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

3-4 SAS/SATA Drive Carrier LED

Each SAS/SATA drive carrier has a green LED. When illuminated, this green LED (on the front of the drive carrier) indicates drive activity. A connection to the backplane enables this LED to blink on and off when that particular drive is being accessed.

Note: The second LED on the SAS/SATA carriers is not used.

Notes

Chapter 4

System Safety

4-1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SuperServer 6014H-32 from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

- Do not work alone when working with high voltage components.

- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and the CD-ROM and floppy drives (not necessary for SAS/SATA drives). When disconnecting power, you should first power down the system with the operating system and then unplug the power cords from all the power supply modules in the system.

- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.

- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- The power supply power cord must include a grounding plug and must be plugged into grounded electrical outlets.

- Serverboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities (see Figure 4-1). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

- CD-ROM Laser: **CAUTION** - this server may have come equipped with a CD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

4-2 General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the SuperServer 6014H-32 clean and free of clutter.

- The SuperServer 6014H-32 weighs approximately 38 lbs (17.3 kg) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.

- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

4-3 ESD Precautions

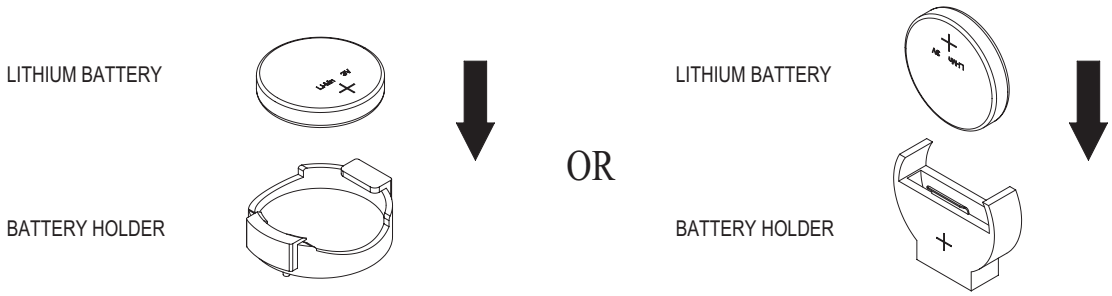
Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

4-4 Operating Precautions

Care must be taken to assure that the chassis cover is in place when the 6014H-32 is operating to ensure proper cooling. Out of warranty damage to the 6014H-32 system can occur if this practice is not strictly followed.

Figure 4-1. Installing the Onboard Battery



Chapter 5

Advanced Serverboard Setup

This chapter covers the steps required to install processors and heatsinks to the X6DHR-3G2 serverboard, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are described and a layout and quick reference chart are included in this chapter. Remember to close the chassis completely when you have finished working on the serverboard to protect and cool the system sufficiently.

5-1 Handling the Serverboard

Static electrical discharge can damage electronic components. To prevent damage to printed circuit boards, it is important to handle them very carefully (see Chapter 4). Also note that the size and weight of the serverboard can cause it to bend if handled improperly, which may result in damage. To prevent the serverboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from static discharge.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.

Unpacking

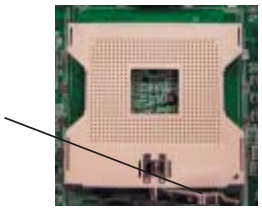
The serverboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

5-2 Processor and Heatsink Installation

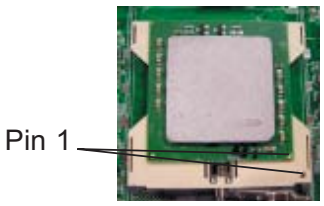
When handling the processor package, avoid placing direct pressure on the label area of the fan. Also, do not place the serverboard on a conductive surface, which can damage the BIOS battery and prevent the system from booting up.

IMPORTANT: Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket **before** you install the (optional) heatsink. The X6DHR-3G2 can support either one or two Xeon 604-pin processors. If installing one processor only, install it into CPU socket #1.

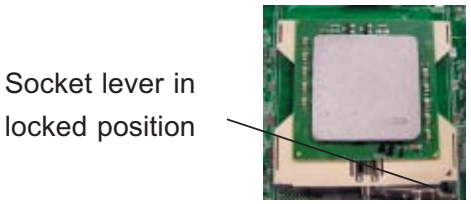
1. Lift the lever on the CPU socket. Lift the lever completely or you will damage the CPU socket when power is applied. (Install a processor into CPU #1 socket first.)



2. Install the CPU in the socket. Make sure that pin 1 of the CPU is seated on pin 1 of the socket (both corners are marked with a triangle). When using only one CPU, install it into CPU socket #1 (CPU socket #2 is automatically disabled if only one CPU is used).



3. Press the lever down until you hear it *click* into the locked position. See Figure 5-1 for pictures of the 604-pin CPU socket before and after the processor is installed.

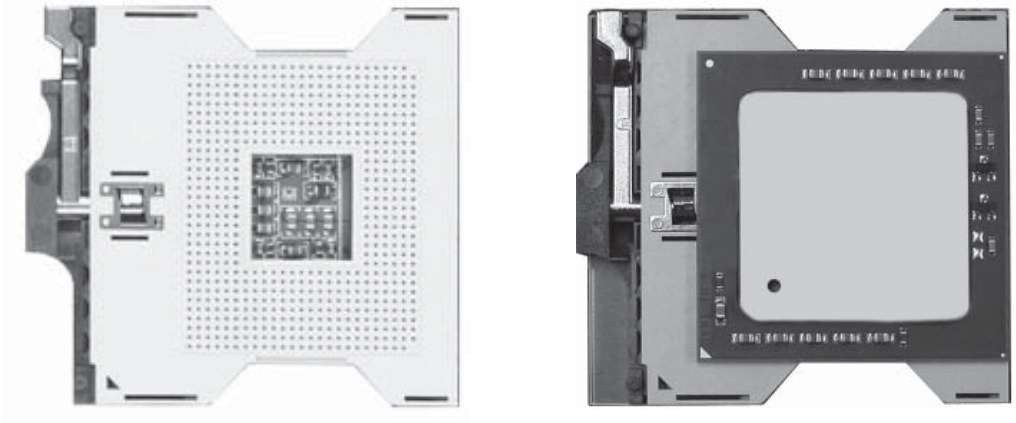


4. To install the heatsink (optional), do not apply any thermal compound to the heatsink or CPU die - the proper amount has already been applied. Place the heatsink directly on the CPU so that the four mounting holes are aligned with those on the retention mechanism. Make sure the heatsink sits completely flat on the CPU - if not completely flat, the space between the two will degrade the heat dissipation function of the heatsink, which may cause the processor to overheat.

5. Screw in two diagonal screws until just snug (eg. screws #1 and #2 in Figure 5-2 - do not fully tighten), then do the same with the remaining two diagonal screws. Finish by fully tightening all four screws (see Figure 5-2).

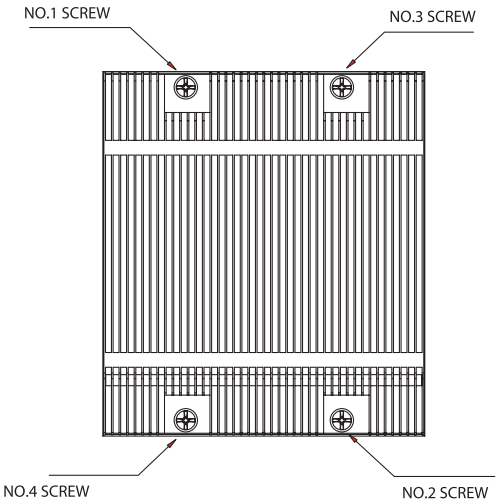
6. If installing two processors, repeat these steps to install the second processor in the CPU #2 slot.

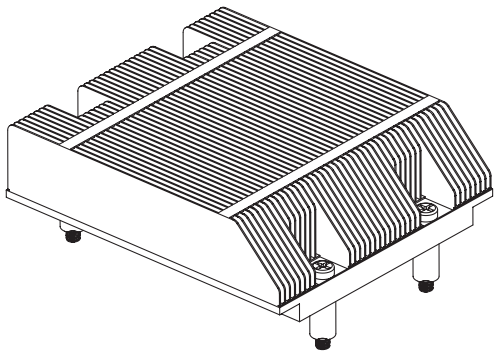
Figure 5-1. 604-pin PGA Socket: Empty and with Processor Installed



Warning! Make sure you lift the lever completely when installing the CPU. If the lever is only partly raised, damage to the socket or CPU may result.

Figure 5-2. Heatsink Installation (heatsinks are optional)





Do not reuse thermal grease!

5-3 Connecting Cables

Now that the processors are installed, the next step is to connect the cables to the serverboard. These include the data (ribbon) cables for the peripherals and control panel and the power cables.

Connecting Data Cables

The ribbon cables used to transfer data from the peripheral devices have been carefully routed in preconfigured systems to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to reroute them as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). If you are configuring the system, keep the airflow in mind when routing the cables. The following peripheral data cables (with their connector locations noted) should be connected. See the serverboard layout diagram in this chapter for connector locations.

- Floppy Drive cable (J12)
  (Floppy power cable to J9 on SATA backplane)
- CD-ROM Drive cable (J5)
  (CD-ROM power cable to J10 on SATA backplane)
- SAS cables (JSM1)
- Control Panel cable (JF1, see next page)

Connecting Power Cables

The X6DHR-3G2 has a 20-pin primary power supply connector designated "J3" for connection to the ATX power supply. Connect the appropriate connector from the power supply to J3 to supply power to the serverboard. See the Connector Definitions section in this chapter for power connector pin definitions.
In addition, your power supply must be connected to the 4-pin Secondary ATX Power connection at J38 and the 8-pin processor power connector at J1D1.

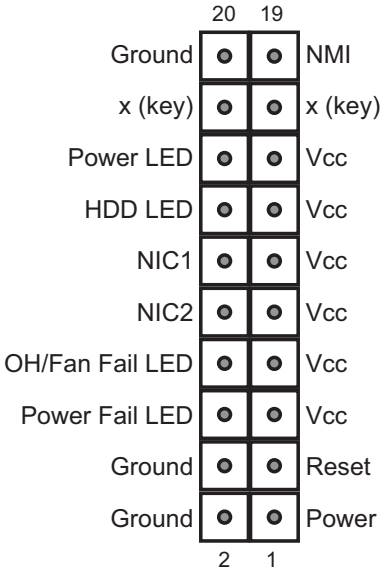
Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-3 for the pin locations of the various front control panel buttons and LED indicators. Please note that even and odd numbered pins are on opposite sides of each header.

All JF1 wires have been bundled into single keyed ribbon cable to simplify their connection. The red wire in the ribbon cable plugs into pin 1 of JF1. Connect the other end of the cable to the Control Panel printed circuit board, located just behind the system status LEDs in the chassis.

See the Connector Definitions section in this chapter for details and pin descriptions of JF1.

Figure 5-3. Front Control Panel Header Pins (JF1)



5-4 I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-4 below for the colors and locations of the various I/O ports.

Figure 5-4. Rear Panel I/O Ports

5-5 Installing Memory

Note: Check the Supermicro web site for recommended memory modules.

CAUTION

Exercise extreme care when installing or removing DIMM modules to prevent any possible damage. Also note that the memory is interleaved to improve performance (see step 1).

DIMM Installation (See Figure 5-5)

1. Insert the desired number of DIMMs into the memory slots, starting with Bank 1 (both DIMM#1A and DIMM#1B). The memory scheme is interleaved so you must install two modules at a time, beginning with Bank 0, then Bank 1 and so on.

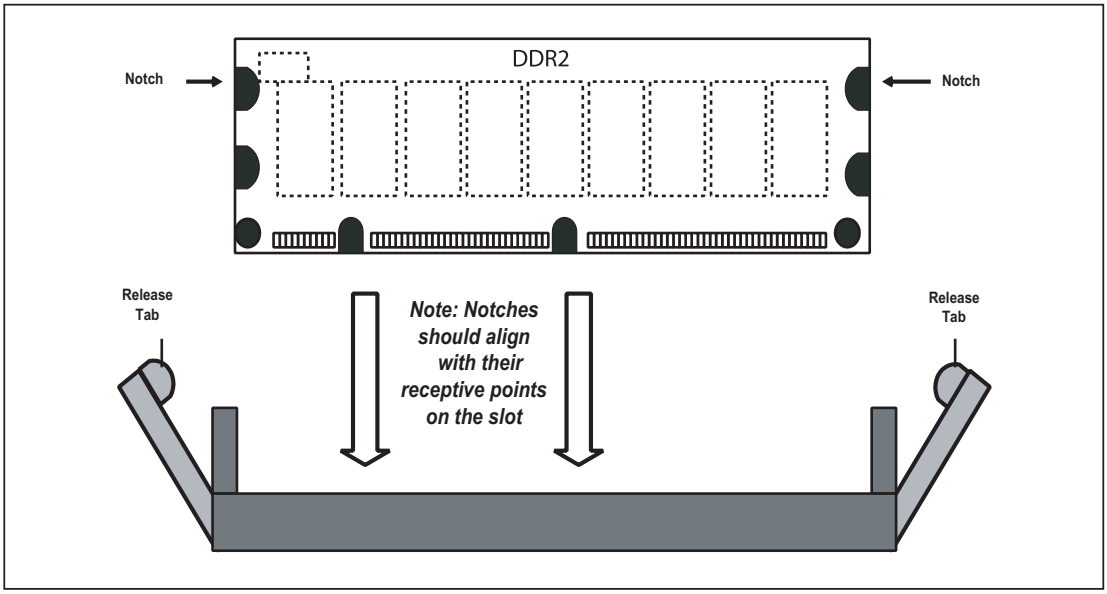
2. Insert each DIMM module vertically into its slot. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM module incorrectly.

3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules (see step 1 above).

Memory Support

The X6DHR-3G2 supports up to 16 GB of registered ECC DDR2-400 SDRAM. You should not mix DIMMs of different sizes and speeds. See Figure 5-5 for installing and removing memory modules.

Figure 5-5a. Installing DIMM into Slot

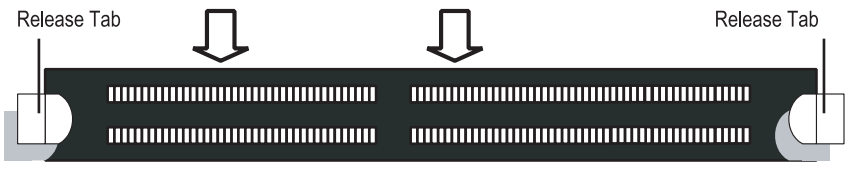


To Install: Insert module vertically and press down until it snaps into place. Pay attention to the bottom notches.

To Remove: Use your thumbs to gently push each release tab outward to free the DIMM from the slot.

Figure 5-5b. Top View of DDR Slot

Top View of DDR2 Slot



5-6 Adding PCI Cards

1. PCI slots

The 6014H-32 can accommodate add-on cards in both the PCI-X 133 MHz and the PCI-X 100 MHz slot with the use of two riser cards, which are included with the system: the CSE-RR1U-X riser supports a standard size card in slot #6 and the CSE-RR1U-XLP riser supports a low profile card in slot #7).

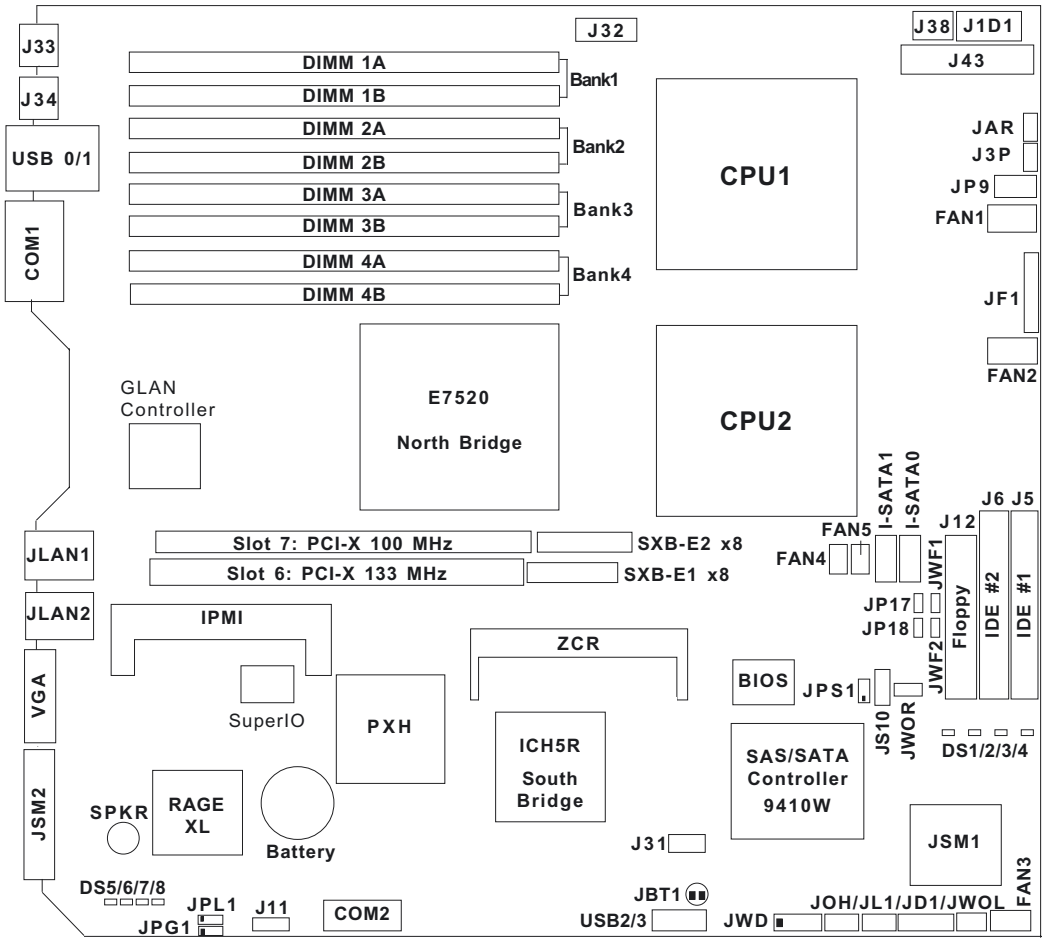
An additional two riser cards are available as an option to support add-on cards in the SXB-E1 and SXB-E2 x8 (PCI-Express) slots: the CSE-RR1U-EL riser (for a standard size card) and the CSE-RR1U-ELP (for a low profile card).

2. PCI card installation

Before installing a PCI add-on card, make sure you install it into the correct riser card. Begin by releasing the locking tab that corresponds to the slot you wish to populate. Insert the expansion card into the correct riser card, pushing down with your thumbs evenly on both sides of the card.

5-7 Serverboard Details

Figure 5-6. SUPER X6DHR-3G2 Layout
(not drawn to scale)



Note:

Jumpers not noted are for test purposes only.

X6DHR-3G2 Quick Reference

Jumper	Description	Default Setting
J3P	3rd Power Supply Detect	Open (Disabled)
JBT1	CMOS Clear	See Jumper Section
JP17/JP18	Compact Flash Master/Slave Select	Pins 1-2 (Master)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JPL1	JLAN Enable/Disable	Pins 1-2 (Enabled)
JPS1	SAS Enable/Disable	Pins 1-2 (Enabled)
JWD	Watchdog	Pins 1-2 (Reset)

Connector	Description
COM1/COM2	COM1/COM2 Serial Port/Header
FAN1-5	System Fan Headers
IPMI	IPMI 2.0 Socket
J1D1	Processor Power Connector
J5/J6	IDE #1/#2 Connectors (both can support CF cards)
J11	SMB (System Management Bus) Header
J12	Floppy Disk Drive Connector
J32	SMB (System Management Bus) Power Header
J33/J34	Keyboard/Mouse Ports
J38	Secondary (12V) ATX Power Connector
J43	Primary 20-pin ATX Power Connector
JAR	Alarm Rest Header
JD1	Power LED/Speaker Header
JF1	Front Control Panel Connector
JL1	Chassis Intrusion Header
JLAN1/2	Gigabit Ethernet Ports
JOH1	Overheat LED Header
JP9	Power Supply Fail Header
JS9	SAS (to IO Panel) Activity LED Header
JS10	SAS I^2C Header
JSM1/JSM2	SAS Ports (JSM1 = SAS0-3, JSM2 = SAS4-7)
JWF1/JWF2	Compact Flash Card PWR **(*Note 2)**
JWOL	Wake-on-LAN Header
JWOR	Wake-on-Ring Header
SATA0/1	6300ESB Serial ATA Connectors
USB0/1	Universal Serial Bus Ports
USB2/3	Universal Serial Bus Headers

Indicators	Description
DS1-DS8	SAS Activity LEDs

5-8 Connector Definitions

ATX Power Connection

The power supply connector meets the SSI (Superset ATX) 20-pin specification. Make sure that the orientation of the connector is correct. See the table on the right for pin definitions.

ATX Power 24-pin Connector Pin Definitions (J43)

Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

PWR_SEC Connection

In addition to the Primary ATX power connector (above), the Secondary 12v 8-pin J15 connector (J38) must also be connected to your power supply. See the table on the right for pin definitions.

+12V 4-pin Power Pin Definitions (J38)

Pins	Definition
1 & 2	Ground
3 & 4	+12V

Processor Power Connector

The header at J1D1 must also be connected to the power supply to provide power for the processor(s). See the table on the right for pin definitions.

Processor Power Pin Definitions (J1D1)

Pins	Definition
1 through 4	Ground
5 through 8	+12V

NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions (JF1)

Pin#	Definition
19	Control
20	Ground

Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

Power LED Pin Definitions (JF1)

Pin#	Definition
15	Vcc
16	Control

HDD LED

The HDD (IDE Hard Disk Drive) LED connection is located on pins 13 and 14 of JF1. Attach the IDE hard drive LED cable to display disk activity. Refer to the table on the right for pin definitions.

HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	Vcc
14	HD Active

NIC1 LED

The NIC1 (Network Interface Controller) LED connection is located on pins 11 and 12 of JF1. Attach the NIC1 LED cable to display network activity. Refer to the table on the right for pin definitions.

NIC1 LED Pin Definitions (JF1)	
Pin#	Definition
11	Vcc
12	Ground

NIC2 LED

The NIC2 (Network Interface Controller) LED connection is located on pins 9 and 10 of JF1. Attach the NIC2 LED cable to display network activity. Refer to the table on the right for pin definitions.

NIC2 LED Pin Definitions (JF1)	
Pin#	Definition
9	Vcc
10	Ground

Overheat/Fan Fail LED (OH)

Connect an LED to the OH connection on pins 7 and 8 of JF1 to provide advanced warning of chassis overheating. Refer to the table on the right for pin definitions.

OH/Fan Fail LED Pin Definitions (JF1)	
Pin#	Definition
7	Vcc
8	Ground

Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions. This only applies to systems with redundant power supplies (not the 6014H-32).

Power Fail LED Pin Definitions (JF1)	
Pin#	Definition
5	Vcc
6	Ground

Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to the hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)

Pin#	Definition
3	Reset
4	Ground

Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (see the Power Button Mode setting in BIOS). To turn off the power when set to suspend mode, depress the button for at least 4 seconds. Refer to the table on the right for pin definitions.

Power Button Pin Definitions (JF1)

Pin#	Definition
1	PW_ON
2	Ground

Universal Serial Bus (USB0/1)

Two Universal Serial Bus ports are located beside the PS/2 keyboard/mouse ports. USB0 is the bottom connector and USB1 is the top connector. See the table on the right for pin definitions.

Universal Serial Bus Pin Definitions (USB0/1)

USB0		USB1	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	N/A	5	Key

Chassis Intrusion

The Chassis Intrusion header is designated at JL1. Attach the appropriate cable to inform you of a chassis intrusion.

Chassis Intrusion Pin Definitions (JL1)

Pin#	Definition
1	Intrusion Input
2	Ground

Serial Ports

The COM1 serial port is located beside the mouse port. COM2 is a header on the serverboard (see serverboard layout for location). See the table on the right for pin definitions.

Serial Port Pin Definitions (COM1/COM2)

Pin #	Definition	Pin #	Definition
1	CD	6	DSR
2	RD	7	RTS
3	TD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

Note: Pin 10 is included on the header but not on the port. NC indicates no connection.

Power Supply Fail Header

Connect a cable from your power supply to the Power Fail header to provide you with warning of a power supply failure. The warning signal is passed through the PWR_LED pin to indicate a power failure. See the table on the right for pin definitions.

Power Fail Header Pin Definitions (JP9)

Pin#	Definition
1	P/S 1 Fail Signal
2	P/S 2 Fail Signal
3	P/S 3 Fail Signal
4	Reset (from MB)

Fan Headers

The X6DHR-3G2 has five fan headers, designated Fan1 through Fan5. Fan speed is controlled via Thermal Management with a BIOS setting. See the table on the right for pin definitions.

Fan Header Pin Definitions (Fan1-5)

Pin#	Definition
1	Ground (Black)
2	+12V (Red)
3	Tachometer

Overheat LED

Connect an LED to the JOH1 header to provide warning of a chassis overheating condition. See the table on the right for pin definitions.

Overheat LED Pin Definitions (JOH1)

Pin#	Definition
1	+5V
2	OH Active

Extra Universal Serial Bus Headers

Two additional USB headers (USB2/3) are located near the WWD jumper on the serverboard. These are included for connection to the ports on the front of the chassis. A USB cable (not included) is needed for the connection. See the table on the right for pin definitions.

Front Panel Universal Serial Bus Pin Definitions (USB2/3)

USB2		USB3	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	N/A	5	N/A

Power LED/Speaker

On the JDI header, pins 1-3 are for a power LED, pins 4-7 are for the speaker. See the table on the right for speaker pin definitions. Note: The speaker connector pins are for use with an external speaker. If you wish to use the onboard speaker, you should close pins 6-7 with a jumper.

Speaker Connector Pin Definitions (JD1)

Pin #	Function	Definition
4	+	Speaker data (red wire)
5	Key	No connection
6		Key
7		Speaker data

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse ports are located at J33 and J34, respectively. See the table on the right for pin definitions.

PS/2 Keyboard and Mouse Port Pin Definitions (J33, J34)

Pin#	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

JLAN1/2 (Ethernet Ports)

Two Ethernet ports (designated JLAN1 and JLAN2) are located beside the VGA port on the I/O backplane. These ports accept RJ45 type cables.

Wake-On-LAN

The Wake-On-LAN header is designated WOL. See the table on the right for pin definitions. You must enable the LAN Wake-Up setting in BIOS to use this feature. You must also have a LAN card with a Wake-on-LAN connector and cable.

Wake-On-LAN Pin Definitions (WOL)

Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up

Wake-On-Ring

The Wake-On-Ring header is designated JWOR. This function allows your computer to receive and "wake-up" by an incoming call to the modem when in suspend state. See the table on the right for pin definitions. You must have a WOR card and cable to use this feature.

Wake-On-Ring Pin Definitions (JWOR)

Pin#	Definition
1	Ground (Black)
2	Wake-up

SMB

The System Management Bus header (for the PCI bus) designated J11 is located near the battery. Connect the appropriate cable here to utilize SMB on your system. See the table on the right for pin definitions.

SMB Header Pin Definitions (J11)

Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

SMB Power (I^2C)

The header at J32 is for SMB, which may be used to monitor the status of the power supply. See the table on the right for pin definitions.

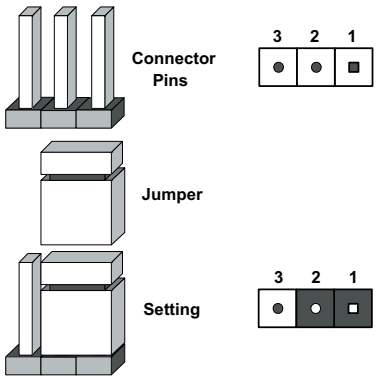
SMB Power (I^2C) Pin Definitions (J32)

Pin#	Definition
1	Clock
2	SMB Data
3	N/A
4	N/A
5	N/A

5-9 Jumper Settings

Explanation of Jumpers

To modify the operation of the serverboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram at right for an example of jumping pins 1 and 2. Refer to the serverboard layout page for jumper locations.



Note 1: On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

CMOS Clear

JBT1 is used to clear CMOS and will also clear any passwords. Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To clear CMOS,

1) First power down the system and unplug the power cord(s)
2) With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver
3) Remove the screwdriver (or shorting device)
4) Reconnect the power cord(s) and power on the system.

Note: *Do not use the PW_ON connector to clear CMOS*.

VGA Enable/Disable

JPG1 allows you to enable or disable the VGA port. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

VGA Enable/Disable Jumper Settings (JPG1)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

JLAN Enable/Disable

Change the setting of jumper JPL1 to enable or disable the JLAN1 and JLAN2 Ethernet ports. See the table on the right for jumper settings. The default setting is enabled

JLAN Enable/Disable Jumper Settings (JPL1)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

3rd Power Supply Fail Detect Enable/Disable

The system can notify you in the event of a power supply failure. This feature assumes that three power supply units are installed in the chassis with one acting as a backup. If you only have one or two power supply units installed, you should disable this (the default setting) with J3P to prevent false alarms.

3rd Power Supply Fail Detect Enable/Disable Jumper Settings (J3P)	
Jumper Setting	Definition
Open*	Disabled
Closed	Enabled

Note: This feature is only available when using redundant Supermicro power supplies.

Alarm Reset (JAR)

The system will notify you in the event of a power supply failure. This feature assumes that Supermicro redundant power supply units are installed in the chassis. If you only have a single power supply installed, you should not connect anything to this jumper to prevent false alarms. See the table on the right for jumper settings.

Alarm Reset Jumper Settings (JAR)	
Pin#	Definition
2	+5V
1	Ground

Watch Dog Enable/Disable

JWD controls the Watch Dog function. Watch Dog is a system monitor that can reboot the system when a software application hangs. Pins 1-2 will cause WD to reset the system if an application hangs. Pins 2-3 will generate a non-maskable interrupt signal for the application that is hung up. See the table on the right for jumper settings. Watch Dog must also be enabled in BIOS. **Note:** When enabled, the user needs to write their own application software in order to disable the Watch Dog Timer.

Watch Dog Jumper Settings (JWD)

Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

Compact Flash Master/Slave

If you wish to use a Compact Flash card in the IDE slot(s), you must assign master or slave status to the slot(s) being used. JP17 assigns status to the IDE#1 slot and JP18 assigns status to the IDE#2 slot. See the table on the right for jumper settings.

Compact Flash Master/Slave Jumper Settings (JP17/JP18)

Jumper Setting	Definition
Open	Slave
Closed	Master

SAS Controller Enable

JPS1 enables or disables the Adaptec 9140W SAS controller on the serverboard. See the table on the right for jumper settings. The default setting is enabled.

SAS Controller Enable Jumper Settings (JPS1)

Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

5-10 Onboard Indicators

JLAN1/JLAN2 LEDs

The Ethernet ports (located beside the VGA port) have two LEDs. On each Gigabit LAN port, the yellow (right) LED indicates activity while the left LED may be green, orange or off to indicate the speed of the connection. See the table on the right for the functions associated with the left (connection speed) LED.

JLAN Left LED (Connection Speed Indicator)

LED Color	Definition
Off	10 MHz
Green	100 MHz
Amber	1 GHz

SAS Activity LED Indicators

The SAS Activity LED indicators (DS1-DS8) indicate the activity status of SAS ports (0-7). See the table on the right for pin definitions.

SAS Activity LED Indicators (DS9-DS16)

DS#	Definition	DS#	Definition
DS1	SAS0:Act	DS5	SAS4:Act
DS2	SAS1:Act	DS6	SAS5:Act
DS3	SAS2:Act	DS7	SAS6:Act
DS4	SAS3:Act	DS8	SAS7:Act

5-11 SATA, Floppy and Hard Drive Connections

Note the following when connecting the floppy and hard disk drive cables:

- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

Floppy Connector

The floppy connector is designated J12. See the table below for pin definitions.

Floppy Drive Connector Pin Definitions (J12)

Pin#	Definition	Pin #	Definition
1	Ground	2	FDHDIN
3	Ground	4	Reserved
5	Key	6	FDEDIN
7	Ground	8	Index
9	Ground	10	Motor Enable
11	Ground	12	Drive Select B
13	Ground	14	Drive Select B
15	Ground	16	Motor Enable
17	Ground	18	DIR
19	Ground	20	STEP
21	Ground	22	Write Data
23	Ground	24	Write Gate
25	Ground	26	Track 00
27	Ground	28	Write Protect
29	Ground	30	Read Data
31	Ground	32	Side 1 Select
33	Ground	34	Diskette

IDE Connectors

See the table on the right for pin definitions for the onboard IDE#1 and #2 connectors.

IDE Drive Connectors Pin Definitions (J5/J6)

Pin#	Definition	Pin #	Definition
1	Reset IDE	2	Ground
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	Ground	20	Key
21	DRQ3	22	Ground
23	I/O Write	24	Ground
25	I/O Read	26	Ground
27	IOCHRDY	28	BALE
29	DACK3	30	Ground
31	IRQ14	32	IOCS16
33	Addr1	34	Ground
35	Addr0	36	Addr2
37	Chip Select 0	38	Chip Select 1
39	Activity	40	Ground

SATA Connectors

See the table on the right for pin definitions for the onboard SATA connectors.

SATA Connector Pin Definitions (JSM1/JSM2)

Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC813T-500 chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the next step.

Tools Required

The only tool you will need to install components and perform maintenance is a Philips screwdriver.

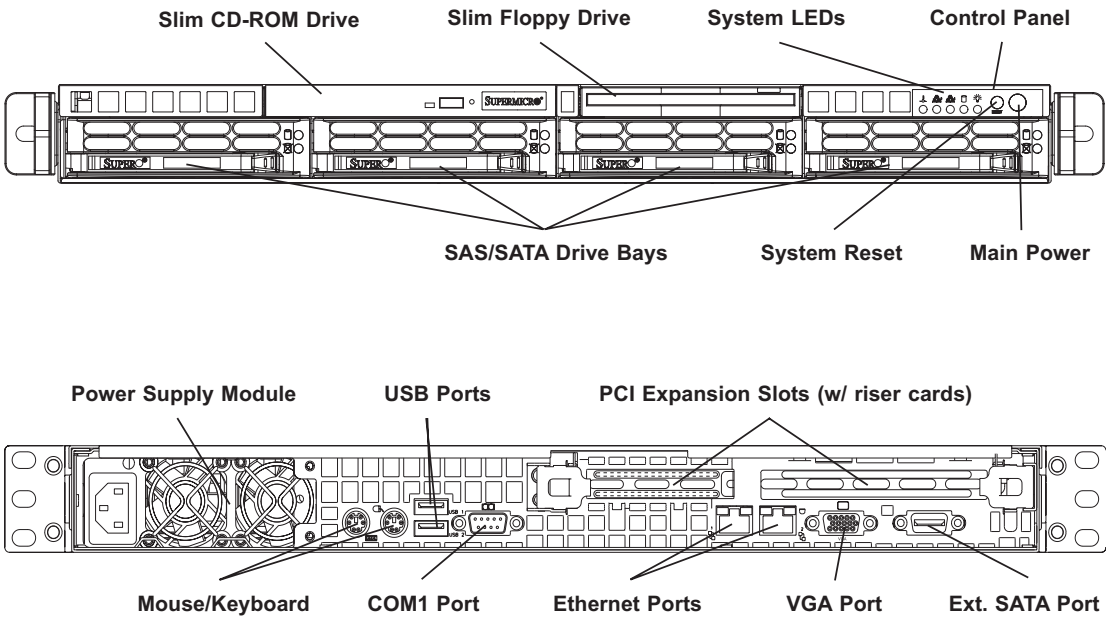
6-1 Static-Sensitive Devices

Electricstatic discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD damage.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Figure 6-1. Chassis: Front and Rear Views



6-2 Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the serverboard to provide you with system status indications. These wires have been bundled together as a ribbon cable to simplify the connection. Connect the cable from JF1 on the serverboard to the appropriate header on the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both connectors. Pull all excess cabling out of the airflow path.

The control panel LEDs inform you of system status. See "Chapter 3: System Interface" for details on the LEDs and the control panel buttons. Details on JF1 can be found in "Chapter 5: Advanced Serverboard Setup."

6-3 System Fans

Two 10-cm blower fans provide all the cooling needed for the SuperServer 6014H-32. It is very important that the chassis top cover is properly installed and making a good seal in order for the cooling air to circulate properly through the chassis and cool the components. See Figure 6-2.

System Fan Failure

Fan speed is controlled by system temperature via a BIOS setting. If a fan fails, the remaining fan will ramp up to full speed and the overheat/fan fail LED on the control panel will turn on. Replace any failed fan at your earliest convenience with the same type and model (the system can continue to run with a failed fan). Remove the top chassis cover (see instructions on p. 2-8) while the system is still running to determine which of the two fans has failed. Then power down the system before replacing a fan. Removing the power cord(s) is also recommended as a safety precaution.

Replacing System Cooling Fans

1. Removing a fan

After turning off the power to the system, first remove the chassis cover and unplug the fan cable from the motherboard. Unscrew the failed blower fan from the chassis and pull it completely out from the serverboard.

2.Installing a new fan

Replace the failed fan with an identical 10-cm, 12 volt fan (available from Supermicro: p/n FAN-0059). Install the new fan in its proper place in the chassis by positioning it on the two mounting posts. Secure the fan to the chassis with the screws you removed previously, then attach the fan wires to the same chassis fan header you removed it from. Make sure the air seal under the fan is properly installed and creating a good seal. Power up the system and check that the fan is working properly and that the LED on the control panel has turned off. Finish by replacing the chassis cover.

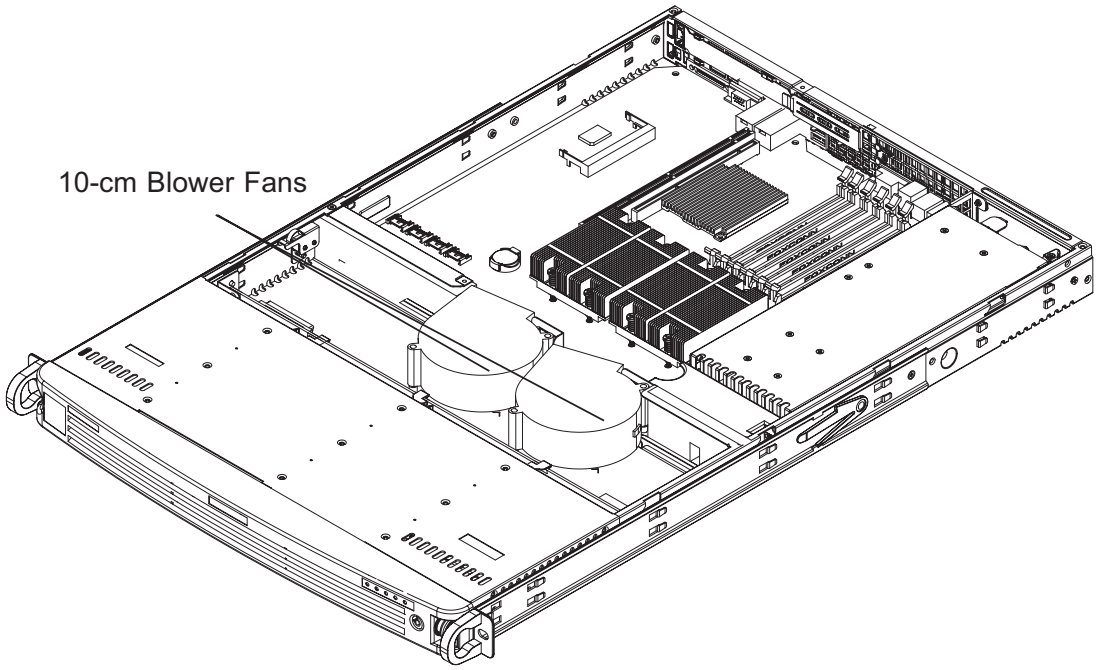


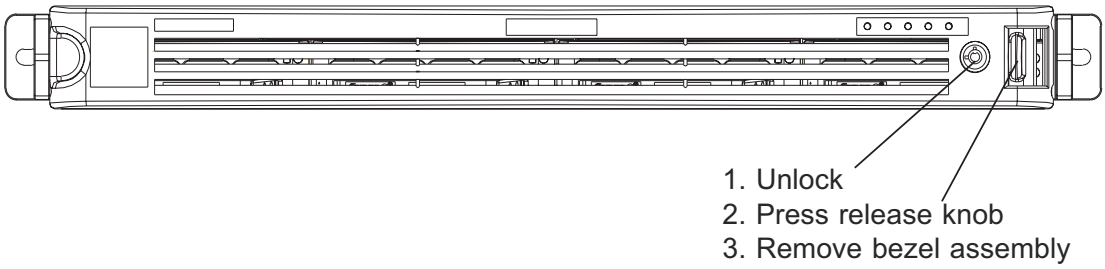
Figure 6-2. System Cooling Fans (with optional front bezel shown)

6-4 Drive Bay Installation/Removal

Removing the Front Bezel

If your system has a front bezel (optional) attached to the chassis, you must first remove it to gain access to the drive bays. To remove the bezel, first unlock the front of the chassis then press the release knob (see Figure 6-3). Carefully remove the bezel with both hands. A filter located within the bezel can be removed for replacement/cleaning. It is recommended that you keep a maintenance log of filter cleaning/replacement, since its condition will affect the airflow throughout the whole system.

Figure 6-3. Removing the Front Bezel



Accessing the Drive Bays

SAS/SATA Drives: Because of their hotswap capability, you do not need to access the inside of the chassis or power down the system to install or replace SAS/SATA drives. Proceed to the next step for instructions.

CD-ROM/Floppy Disk Drives: For installing/removing a CD-ROM or floppy disk drive, you will need to gain access to the inside of the 6014H-32 by removing the top cover of the chassis. Proceed to the "CD-ROM and Floppy Drive Installation" section later in this chapter for instructions.

Note: Only a "slim" CD-ROM drive will fit into the 6014H-32.

SAS/SATA Drive Installation

1. Mounting a SAS/SATA drive in a drive carrier

The SAS/SATA drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the SAS/SATA drive bays. For this reason, even empty carriers without drives installed must remain in the chassis. To add a new SAS/SATA drive, install a drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier. Secure the drive to the carrier with six screws, as shown in Figure 6-4.

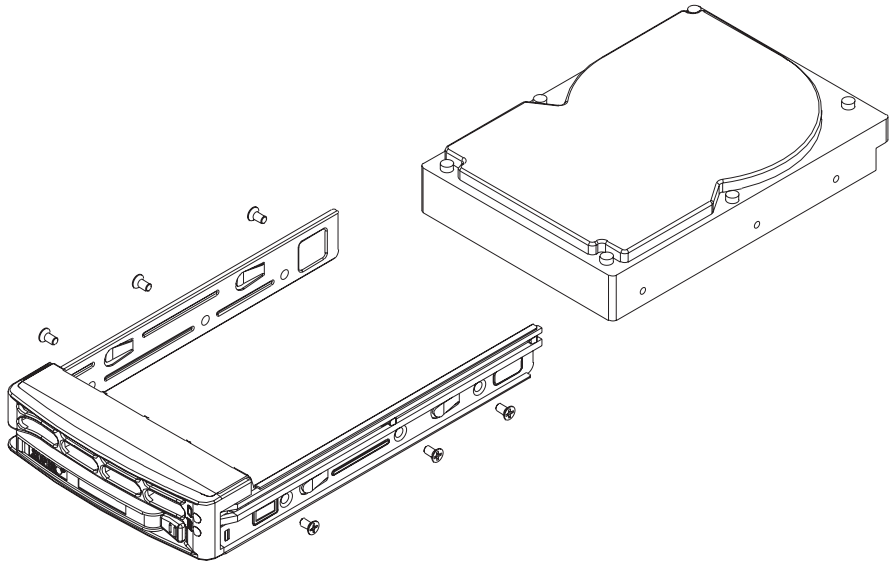


Figure 6-4. Mounting a SAS/SATA Drive in a Carrier

Use caution when working around the SAS/SATA backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane or obstruct the holes, which aid in proper airflow.

<u>Important:</u> Regardless of how many SAS/SATA hard drives are installed, all drive carriers must remain in the drive bays to maintain proper airflow.

2. Installing/removing hot-swap SAS/SATA drives

The SAS/SATA drive carriers are all easily accessible at the front of the chassis. These hard drives are hot-pluggable, meaning they can be removed and installed without powering down the system. To remove a carrier, push the release button located beside the drive LEDs. Then swing the colored handle fully out and use it to pull the unit straight out (see Figure 6-5).

Note: Your operating system must have RAID support to enable the hot-plug capability of the SAS/SATA drives.

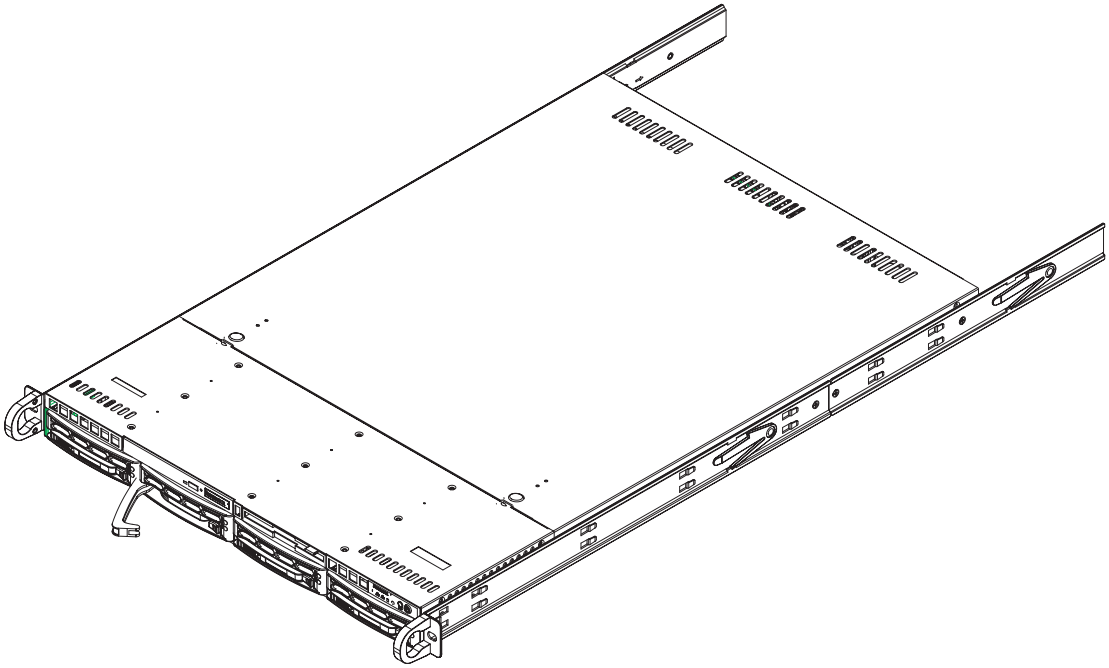


Figure 6-5. Removing a SAS/SATA Drive from the Server

SAS/SATA Power Cables

SAS and SATA power cables should be routed so that they do not block the airflow through the chassis. See the serverboard layout diagram for the location of the cable connections.

SAS/SATA Backplane

The SAS/SATA drives plug into a backplane that provides power, drive ID and bus termination. A RAID controller can be used with the backplane to provide data security. The operating system you use must have RAID support to enable the hot-swap capability of the drives. The backplane is already preconfigured, so there are no jumpers or switches present on it.

CD-ROM and Floppy Drive Installation

The top cover of the chassis must be opened to gain full access to the CD-ROM and floppy drive bays. The 6014H-32 accomodates only slim-line CD-ROM drives. Side mounting brackets are needed to mount a slim-line CD-ROM drive in the 6014H-32 server.

You must power down the system before installing or removing a floppy or CD-ROM drive. First, release the retention screws that secure the server unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, depress the two buttons on the top of the chassis to release the top cover and at the same time, push the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server.

With the chassis cover removed, unplug the power and data cables from the drive you want to remove. Then locate the locking tab at the rear of the drive. It will be on the left side of the drive when viewed from the front of the chassis. Pull the tab away from the drive and push the drive unit out the front of the chassis. Add a new drive by following this procedure in reverse order. You may hear a faint *click* of the locking tab when the drive is fully inserted. Remember to reconnect the data and power cables to the drive before replacing the chassis cover and restoring power to the system. Please be aware of the following:

- The floppy disk drive cable has seven twisted wires.
- A color mark on a cable typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

6-5 Power Supply

The SuperServer 6014H-32 has a single 500 watt power supply, which is auto-switching capable. This enables it to automatically sense and operate at a 100v to 240v input voltage. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

Power Supply Failure

If the power supply unit fails, the system will shut down and you will need to replace the unit. Replacement units can be ordered directly from Supermicro (see contact information in the Preface). As there is only one power supply unit in the 6014H-32, power must be completely removed from the server before removing and replacing the power supply unit for whatever reason.

Removing/Replacing the Power Supply

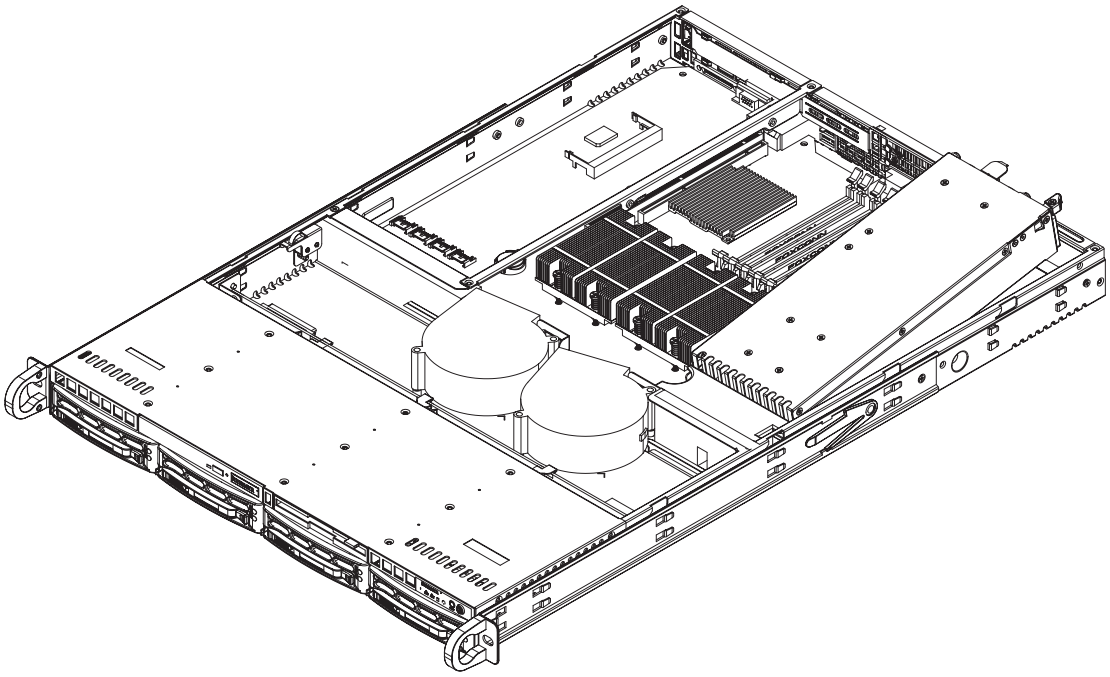
1. Removing the power supply

First turn the power switch on the control panel off, then unplug the power cord from the system. Remove the chassis cover by pressing the two release buttons on the top of the chassis (near the front) and push the chassis top rearward about one inch. To remove the failed power unit, push the beige colored release tab to the right and then carefully lift the unit up about 1/2 inch only. If you lift too high, you may damage the power distribution board that the other end of the unit is connected to. Then, pull the power unit straight back to unplug it from the power distribution board. See Figure 6-6.

2. Installing a new power supply

Replace the failed unit with another unit of the same input voltage, output voltage and wattage. It is highly recommended to replace it with exactly the same model power supply. Carefully insert the new unit into position to plug it into the power distribution board, making sure you are not holding it at too great an angle, which may damage the power distribution board. Push it completely into the power distribution board and seat it in the chassis. When correctly installed it should be laying flat - make sure the end of the power supply is not sitting on the stop in the chassis. Reconnect the power cord, replace the chassis top cover and reposition the unit back into the rack. Finish by depressing the power button on the chassis front control panel.

Figure 6-6. Removing/Replacing the Power Supply



Chapter 7

BIOS

7-1 Introduction

This chapter describes the Phoenix BIOS™ Setup utility for the X6DHR-3G2. The Phoenix ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to Supermicro's web site: <http://www.supermicro.com> for any changes to BIOS that may not be reflected in this manual.

System BIOS

The BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The Phoenix BIOS flash chip stores the system parameters, such as type of disk drives, video displays, etc. in the CMOS. The CMOS memory requires very little electrical power. When the computer is turned off, a back-up battery provides power to the BIOS flash chip, enabling it to retain system parameters. Whenever the computer is powered-on, the computer is configured with the values stored in the BIOS ROM by the system BIOS, which gains control at boot-up.

How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing the <Delete> key at the appropriate time during system boot, see below.

Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Security and Power menus. Beginning with Section 7-3, detailed descriptions are given for each parameter setting in the Setup utility.

Note: fan speed is controlled by the “Fan Speed Control Mode” setting in BIOS (see page 7-15). The recommended setting for the 6014H-32 is “3-pin (Server)”

7-2 Running Setup

Default settings are in bold text unless otherwise noted.

The BIOS setup options described in this section are selected by choosing the appropriate text from the main BIOS Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (see on next page).

When you first power on the computer, the Phoenix BIOS™ is immediately activated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Delete> immediately after turning the system on, or

2. When the message shown below appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Delete> key to activate the main Setup menu:

Press the <Delete> key to enter Setup

7-3 Main BIOS Setup

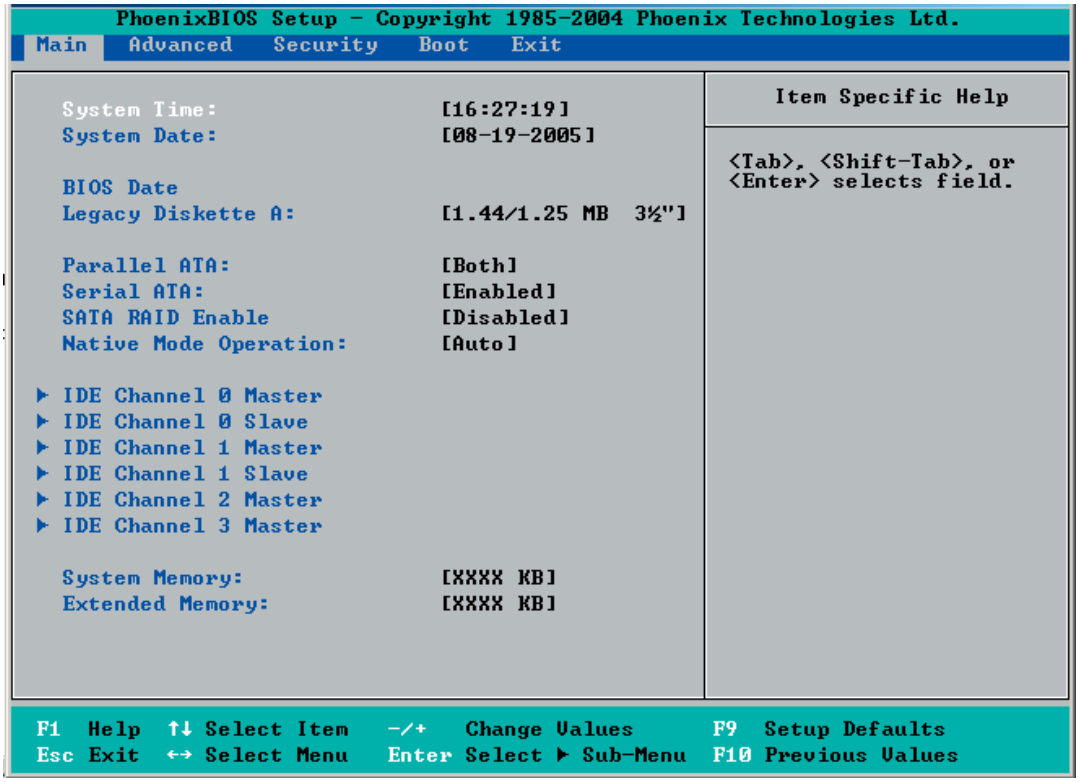
All main Setup options are described in this section. The main BIOS Setup screen is displayed below.

Use the Up/Down arrow keys to move among the different settings in each menu. Use the Left/Right arrow keys to change the options for each setting.

Press the <Esc> key to exit the CMOS Setup Menu. The next section describes in detail how to navigate through the menus.

Items that use submenus are indicated with the ▶icon. With the item highlighted, press the <Enter> key to access the submenu.

Main BIOS Setup Menu


PhoenixBIOS Setup - Copyright 1985-2004 Phoenix Technologies Ltd.
Main Advanced Security Boot Exit
System Time: [16:27:19]
System Date: [08-19-2005]
BIOS Date
Legacy Diskette A: [1.44/1.25 MB 3½"]
Parallel ATA: [Both]
Serial ATA: [Enabled]
SATA RAID Enable [Disabled]
Native Mode Operation: [Auto]
IDE Channel 0 Master
IDE Channel 0 Slave
IDE Channel 1 Master
IDE Channel 1 Slave
IDE Channel 2 Master
IDE Channel 3 Master
System Memory: [XXXX KB]
Extended Memory: [XXXX KB]
Item Specific Help
<Tab>, <Shift-Tab>, or <Enter> selects field.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

Main Setup Features

System Time

To set the system date and time, key in the correct information in the appropriate fields. Then press the <Enter> key to save the data.

System Date

Using the arrow keys, highlight the month, day and year fields and enter the correct data. Press the <Enter> key to save the data.

BIOS Date

This feature allows BIOS to automatically display the BIOS date.

Legacy Diskette A

This setting allows the user to set the type of floppy disk drive installed as diskette A. The options are Disabled, 360Kb 5.25 in, 1.2MB 5.25 in, 720Kb 3.5 in, **1.44/1.25MB**, 3.5 in and 2.88MB 3.5 in.

Parallel ATA

This setting allows the user to enable or disable the function of Parallel ATA. The options are Disabled, Channel 0, Channel 1 and **Both.**

Serial ATA

This setting allows the user to enable or disable the function of Serial ATA. The options are Disabled and **Enabled.**

Serial ATA RAID Enable

Select Enable to enable Serial ATA RAID Functions. (*For the Windows OS environment, use the RAID driver if this feature is set to "Enabled". If "**disabled**", use the "Non-RAID" driver.)

Native Mode Operation

This option allows the user to select the Native Mode for ATA. Some Operating Systems are not supported by the Native Mode. The options are: Serial ATA, Parallel ATA, **Auto**, and Both.

▶IDE Channel 0 Master/Slave, IDE Channel 1 Master/Slave, IDE Channel 2 Master, IDE Channel 3 Master

These settings allow the user to set the parameters of IDE Channel 0 Master/ Slave, IDE Channel 1 Master/Slave, IDE Channel 2 Master, IDE Channel 3 Master slots. Hit <Enter> to activate the following sub-menu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the sub-menu are:

Type

This option allows the user to select the type of IDE hard drive. The options are **Auto** (allows BIOS to automatically determine the hard drive's capacity, number of heads, Sectors, Maximum Capacity, LBA Format, ect.). Enter a number from 1-39 to select a predetermined type of hard drive, CD-ROM and ATAPI Removable. The option- "User" will allow the user to enter the parameters of the HDD installed at this connection. The option-"Auto" will allow BIOS to automatically configure the parameters of the HDD installed at the connection. Choose the option"1-39"

to select a pre-determined HDD type. Select CD-ROM if a CD-ROM drive is installed. Select ATAPI if a removable disk drive is installed.

Multi-Sector Transfers

Select the number of transfer sectors. The options are Disabled, 2, 4, 6, 8 and **16 Sectors**.

LBA Mode Control

This item determines whether Phoenix BIOS will access the IDE Primary Master Device via LBA mode. The options are **Disabled** and Enabled.

32 Bit I/O

Selects 32 Bit I/O operation. The options are Enabled and **Disabled**.

Transfer Mode

Selects the transfer mode. The options are **Standard**, Fast PIO1, Fast PIO2, Fast PIO3, Fast PIO4, FPIO3/DMA1 and FPIO4/DMA2.

Ultra DMA Mode

Selects Ultra DMA Mode. The options are **Disabled**, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4, Mode 5 and Mode 6.

System Memory

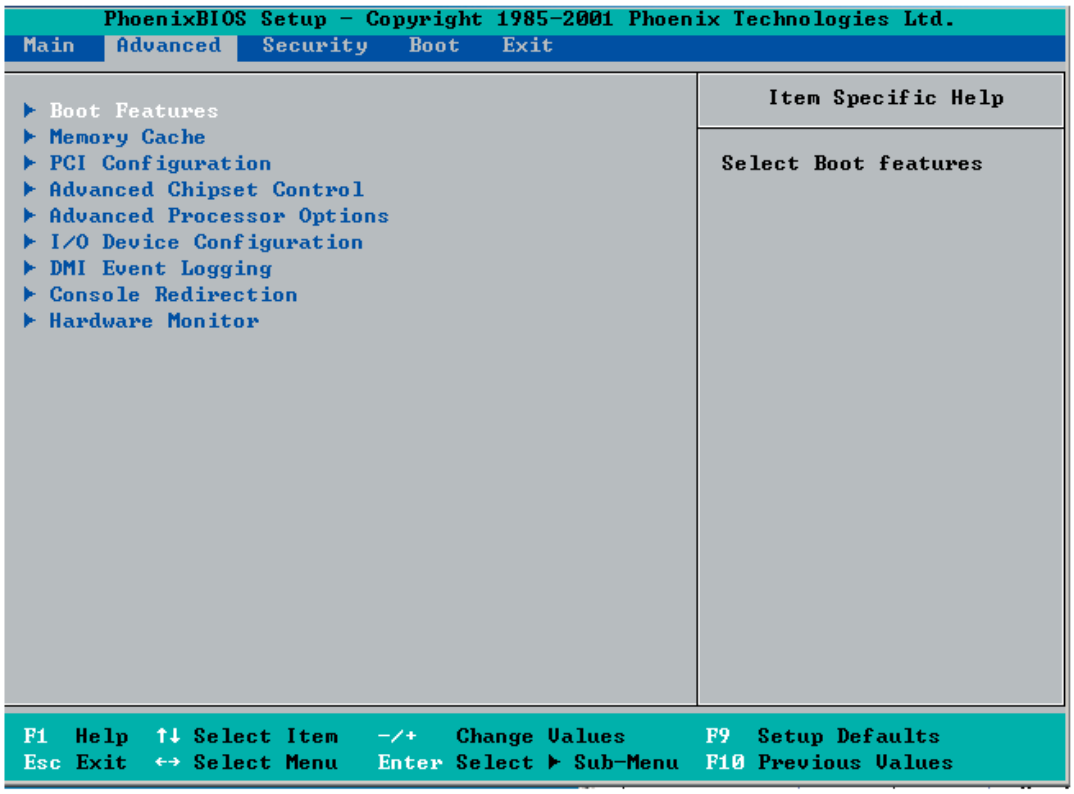
This display informs you how much system memory is recognized as being present in the system.

Extended Memory

This display informs you how much extended memory is recognized as being present in the system.

7-4 Advanced Setup

Choose Advanced from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. The items with a triangle beside them have sub menus that can be accessed by highlighting the item and pressing <Enter>. Options for PIR settings are displayed by highlighting the setting option using the arrow keys and pressing <Enter>. All Advanced BIOS Setup options are described in this section.



▶Boot Features

Access the submenu to make changes to the following settings.

Quick Boot Mode

If enabled, this feature will speed up the POST (Power On Self Test) routine after the computer is turned on. The settings are **Enabled** and Disabled. If Disabled, the POST routine will run at normal speed.

Quiet Boot

This setting allows you to **Enable** or Disable the diagnostic screen during boot-up.

ACPI Mode

Use the setting to determine if you want to employ ACPI (Advanced Configuration and Power Interface) power management on your system. The options are **Yes** and No.

Power Button Behavior

If set to Instant-Off, the system will power off immediately as soon as the user hits the power button. If set to 4-sec, the system will power off when the user presses the power button for 4 seconds or longer. The options are **instant-off** and 4-sec override.

Resume On Modem Ring

Select On to "wake your system up" when an incoming call is received by your modem. The options are **On** and Off.

Power Loss Control

This setting allows you to choose how the system will react when power returns after an unexpected loss of power. The options are Stay On, Power Off and **Last State**.

Watch Dog

This setting is for enabling the Watch Dog feature. The options are Enabled and **Disabled**.

Summary Screen

This setting allows you to **Enable** or Disable the summary screen.

▶Memory Cache

Cache System BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a System BIOS buffer to allow the BIOS write (cache) its data into this reserved memory area. Select "**Write Protect**" to enable this function, and this area will be reserved for BIOS ROM access only. Select "Uncached" to disable this function and make this area available for other devices.

Cache Video BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a Video BIOS buffer to allow the BIOS write (cache) its data into this reserved memory area. Select "**Write Protect**" to enable the function and this area will be reserved for BIOS ROM access only. Select "Uncached" to disable this function and make this area available for other devices.

Cache Base 0-512K

If enabled, this feature will allow the data stored in the base memory area: block 0-512K to be cached (written) into a buffer, a storage area in the Static DRM (SDROM) or written into L1, L2, L3 cache inside the CPU to speed up CPU operations . Select "Uncached" to disable this function. Select "Write Through" to allow data to be cached into the buffer and written into the system memory at the same time. Select "Write Protect" to prevent data from being written into the base memory area of Block 0-512K. Select "Write Back" to allow CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are "Uncached", "Write Through", "Write Protect", and **"Write Back"**.

Cache Base 512K-640K

If enabled, this feature will allow the data stored in the memory area: 512K-640K to be cached (written) into a buffer, a storage area in the Static DRM (SDROM) or written into L1, L2, L3 cache inside the CPU to speed up CPU operations . Select "Uncached" to disable this function. Select "Write Through" to allow data to be cached into the buffer and written into the system memory at the same time. Select "Write Protect" to prevent data from being written into the base memory area of Block 0-512K. Select "Write Back" to allow CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are "Uncached", "Write Through", "Write Protect", and **"Write Back"**.

Cache Extended Memory

If enabled, this feature will allow the data stored in the extended memory area to be cached (written) into a buffer, a storage area in the Static DRM (SDROM) or written into L1, L2, L3 cache inside the CPU to speed up CPU operations. Select "Uncached" to disable this function. Select "Write Through" to allow data to be cached into the buffer and written into the system memory at the same time. Select "Write Protect" to prevent data from being written into the base memory area of Block 0-512K. Select "Write Back" to allow CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are "Uncached", "Write Through", "Write Protect", and **"Write Back"**.

Discrete MTRR Allocation

If enabled, MTRRs (-Memory Type Range Registers) are configured as distinct, separate units and cannot be overlapped. If enabled, the user can achieve better graphic effects when using a Linux graphic driver that requires the write-combining configuration with 4GB or more memory. The options are Enabled and **Disabled**.

▶PCI Configuration

Access the submenu to make changes to the following settings for PCI devices.

Onboard GLAN (Gigabit- LAN) OPROM Configure

Enabling this option provides the capability to boot from GLAN. The options are **Disabled** and Enabled.

Default Primary Video Adapter

This option allows the user to decide which video adapt is the default primary video adapter for the system. The options are **Onboard** and Other.

PCI Parity Error Forwarding

If set to Enabled, NMI signals will be generated when a PCI Parity Error occurs. The options are Enabled and **Disabled**.

ROM Scan Order

If set to **Onboard First**, the Onboard PCI Option ROM will be activated first before the Add-On Device Option ROM is activated. The options are Add-On First and **Onboard First**.

Reset Configuration Data

If set to Yes, this setting clears the Extended System Configuration Data- (ESCD) area. The options are Yes and **No**.

Frequency for PCIX#1/G-LAN

(*Note: *PCIX#1=PCI-X Slot#6 on the MB Silk Screen.)

This option allows the user to change the bus frequency for the devices installed in the slot indicated. The options are **Auto**, PCI 33 MHz, PCI 66 MHz, PCI-X 66 MHz, PCI-X 100 MHz, and PCI-X 133 MHz.

Frequency for PCIX#2/MASS/ZCR (MASS: Mass Storage)

(*Note: *PCIX#2=PCI-X Slot#7 on the MB Silk Screen.)

This option allows the user to change the bus frequency of the devices installed in the slot indicated. The options are **Auto**, PCI 33 MHz, PCI 66 MHz, PCI-X 66 MHz, PCI-X 100 MHz, and PCI-X 133 MHz.

▶PCIX-133MHz Slot#1/PCIX-100MHz Slot#2, PCI-Exp x8 Slot#1, and PCI-Exp x4 Slot#2 (*Note: Slot#1=Slot#6 and Slot#2=Slot#7 as shown on the MB.)

Access the submenu for the settings above to make changes to the following:

Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

Enable Master

This setting allows you to enable the selected device as the PCI bus master. The options are **Enabled** and Disabled.

Latency Timer

This setting allows you to set the clock rate for Bus Master.A high-priority, high-throughout device may benefit from a greater Clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, and 00E0h. For Unix, Novell and other Operating Systems, please select the option: "other". If a drive fails after the installation of a new software , you might want to change this setting and try again. Different OS requires different Bus Master clock rate**.**

Large Disk Access Mode

This setting determines how large hard drives are to be accessed. The options are **DOS** or Other (for Unix, Novellle NetWare and other operating systems).

▶Advanced Chipset Control

Access the submenu to make changes to the following settings.

Force Compliance Mode Entry

This feature allows you to enable the PCI-Express Compliance 1.0 Mode. The options are: **Disabled** or Enabled.

Memory RAS Feature Control

Select this option to enable the Memory RAS Feature Control. The options are **Standard**, Sparing, and Mirroring.

Clock Spectrum Feature

If "Enabled", BIOS will monitor the level of Electromagnetic Interference caused by the components and will attempt to decrease the interference whenever needed. The options are Enabled and **Disabled**.

Memory Remap Function Control

Set to Enabled to re-allocate memory resources for PCI slots. The options are **Enabled** and Disabled.

DRAM Data Integrity Mode

If enabled, this feature allows the data stored in the DRMA memory to be integrated for faster data processing. The options are 72-bit ECC, 144-bit ECC, **Auto** and Disabled.

ECC Error Type

This setting lets you select which type of interrupt to be activated as a result of an ECC error. The options are None, NMI (Non-Maskable Interrupt), **SMI** (System Management Interrupt) and SCI (System Control Interrupt.)

SERR Signal Condition

This setting specifies the conditions required to be qualified as an ECC error. The options are None, **Single Bit**, Multiple Bit and Both.

Enabling Multi-Media Timer

Select Yes to enable Multi-Media Timer. The options are Yes and **No**.

USB Functions

This setting allows you to **Enable** or Disable all functions for the USB devices specified.

Legacy USB Support

This setting allows you to enable support for Legacy USB devices. The settings are **Enabled** and Disabled.

▶Advanced Processor Options

Access the submenu to make changes to the following settings.

CPU Speed

This is a display that indicates the speed of the installed processor.

Hyper-Threading Technology (*Available if supported by the CPU.)

This setting allows you to **Enable** or Disable the function of hyper-threading. Enabling hyper-threading results in increased CPU performance. (Applicable for the XP systems.)

Machine Checking

Set to Enabled to allow the operating system to debug a system crash after a reset. The options are Disabled and **Enabled**.

C1 Enhanced Mode (*Available when supported by the CPU.)

Set to Enabled to enable the Enhanced Halt State. The options are Enabled and **Disabled**. (***Note:** please refer to Intel's web site for detailed information.)

No Execute Mode Memory Protection (*Available when supported by the CPU.)

Enable this feature to enable the functionality of Execute Disable Bit and allow the processor to classify areas in the memory where an application code can execute and where it cannot, and thus preventing a worm or a virus from inserting and creating a flood of codes that will overwhelm the processor or damage the system during an attack. (*Note: this feature is available when your OS and your CPU support the function of Execute Disable Bit.) The options are Disabled and **Enabled**. (***Note**: For more information regarding hardware/software support for this function, please refer to Intel's and Microsoft's web sites.)

Thermal Management 2 (*Available when supported by the CPU.)

If enabled, this feature allows you to select between Thermal Manager 1 and Thermal Manager 2. Set to **Disable** to activate the function of TM1, allowing the CPU to regulate its power consumption based upon the modulation of the CPU Internal clock when the CPU temperature reaches a pre-defined overheat threshold. Set to Enable to activate the function of TM2, which will allow the CPU to reduce its power consumption by lowering the CPU frequency and the CPU voltage when the CPU temperature reaches a pre-defined overheat threshold. (***Note**: please refer to Intel's web site for detailed information.)

Adjacent Cache Line Prefetch

The CPU fetches the cache line for 64 bytes if Dtisabled. The CPU fetches both cache lines for 128 bytes as comprised if **Enabled**.

Processor Power Management (*Available when supported by the CPU.)

This feature allows the user to determine the processor power management mode. If set to C States only, the processor power will be controlled through CPU power states in the ACPI setting. Select "GV1/GV3 only" to enable the function of DBS (Demand Based Switching) which will allow the user to configure CPU power management in the OS. If set to **Disabled**, C States and GV1/GV3 are disabled. If set to Enabled, C States and GV1/GV3 are Enabled. (***Note**: please refer to Intel's web site for detailed information.)

▶I/O Device Configuration

Access the submenu to make changes to the following settings.

KBC Clock Input

This setting allows you to set the clock frequency for the Keyboard Clock. The options are 6MHz, 8MHz, **12 MHz** and 16MHz.

On-board COM 1

This setting allows you to assign control of serial port A. The options are **Enabled** (user defined), Disabled and Auto (BIOS controlled).

Base I/O Address

Select the base I/O address for serial port A. The options are **3F8**, 2F8, 3E8 and 2E8.

Interrupt

Select the IRQ (interrupt request) for serial port A. The options are IRQ3 and **IRQ4**.

On-board COM 2

This setting allows you to assign control of serial port B. The options are **Enabled** (user defined), Disabled and Auto (BIOS controlled).

Mode

Specify the type of device that will be connected to serial port B. The options are **Normal**, and IR (for an infrared device).

Base I/O Address

Select the base I/O address for serial port B. The options are 3F8, **2F8**, 3E8 and 2E8.

Interrupt

Select the IRQ (interrupt request) for serial port B. The options are **IRQ3** and IRQ4.

Floppy Disk Controller

This setting allows you to assign control of the floppy disk controller. The options are **Enabled** (user defined), Disabled and Auto (BIOS controlled).

Base I/O Address

Select the base I/O address for the parallel port. The options are **Primary** and Secondary.

▶DMI Event Logging

Access the submenu to make changes to the following settings.

Event Log Validity

This is a display, not a setting, informing you of the event log validity.

Event Log Capacity

This is a display, not a setting, informing you of the event log capacity.

View DMI Event Log

Highlight this item and press <Enter> to view the contents of the event log.

Event Logging

This setting allows you to **Enable** or Disable event logging.

ECC Event Logging

This setting allows you to **Enable** or Disable ECC event logging.

Mark DMI Events as Read

Highlight this item and press <Enter> to mark the DMI events as read.

Clear All DMI Event Logs

Select Yes and press <Enter> to clear all DMI event logs. The options are Yes and **No**.

▶Console Redirection

Access the submenu to make changes to the following settings.

COM Port Address

Specifies to redirect the console to On-board COM A or On-board COM B. This setting can also be **Disabled**.

BAUD Rate

Select the BAUD rate for console redirection. The options are 300, 1200, 2400, 9600, **19.2K**, 38.4K, 57.6K and 115.2K.

Console Type

Choose from the available options to select the console type for console redirection. The options are VT100, VT100,8bit, PC-ANSI, 7bit, **PCANSI**, VT100+, VT-UTF8.

Flow Control

Choose from the available options to select the flow control for console redirection. The options are: None, XON/XOFF, and **CTS/RTS**.

Console Connection

Select the console connection: either **Direct** or Via Modem.

Continue CR after POST

This option allows the user to decide whether to continue with console redirection after the POST routine. The options are On and **Off**.

▶Hardware Monitor Logic

CPU Temperature Threshold

This option allows the user to set a CPU temperature threshold that will activate the alarm system when the CPU temperature reaches this pre-set temperature threshold. The options are 75°C, **80°C**, 85°C and 90°C.

Highlight this and hit <Enter> to see the status of the following items:

CPU1 Temperature: This item displays CPU1 Temperature.

CPU2 Temperature: This item displays CPU2 Temperature.

System Temperature: This item displays the system Temperature.

Fan Speed Control Modes: [Disable (Full Speed), **3-pin (Server)**]

This feature allows the user to decide how the system controls the speeds of onboard fans. Select "Disable" to disable of the function of fan speed control and the system will run at the full speed (12V.) Select "3-pin Server" to optimize the fan speed control via BIOS Thermal management. The default setting is **3-pin Server**.

Fan 1/ Fan 2/Fan 3/Fan 4/Fan 5

The voltage status of the following items will also be displayed:

Vcore A

Vcore B

P3V3

P5V

N12V

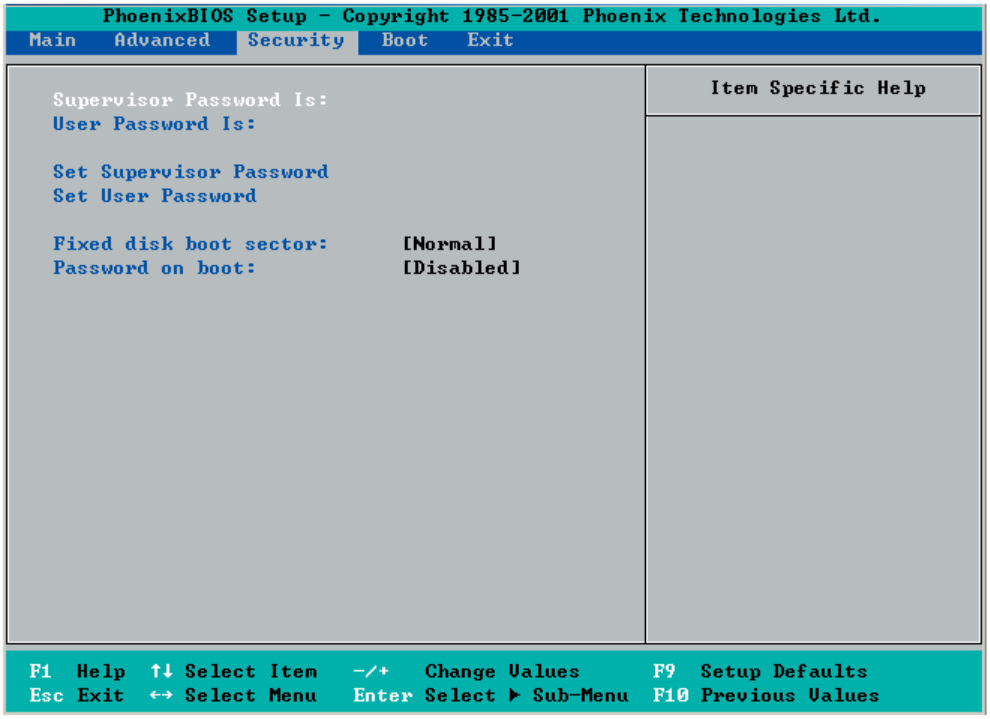
P12V

VDD

P5Vsb

7-5 Security

Choose Security from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. Security setting options are displayed by highlighting the setting using the arrow keys and pressing <Enter>. All Security BIOS settings are described in this section.


PhoenixBIOS Setup - Copyright 1985-2001 Phoenix Technologies Ltd.
Main Advanced Security Boot Exit
Supervisor Password Is:
User Password Is:
Set Supervisor Password
Set User Password
Fixed disk boot sector: [Normal]
Password on boot: [Disabled]
Item Specific Help
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

Supervisor Password Is:

This displays whether a supervisor password has been entered for the system. Clear means such a password has not been used and Set means a supervisor password has been entered for the system.

User Password Is:

This displays whether a user password has been entered for the system. Clear means such a password has not been used and Set means a user password has been entered for the system.

Set Supervisor Password

When the item "Set Supervisor Password" is highlighted, hit the <Enter> key. When prompted, type the Supervisor's password in the dialogue box to set or to change supervisor's password, which allows access to BIOS.

Set User Password

When the item "Set User Password" is highlighted, hit the <Enter> key. When prompted, type the user's password in the dialogue box to set or to change the user's password, which allows access to the system at boot-up.

Fixed Disk Boot Sector

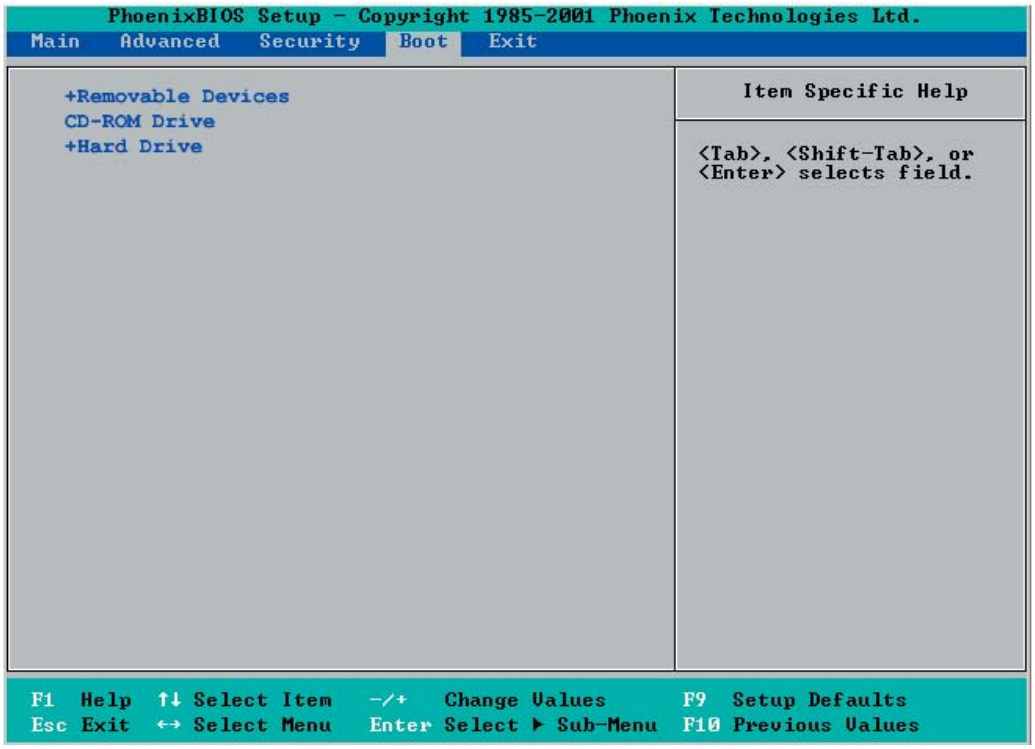
This setting may offer some protection against viruses when set to Write Protect, which protects the boot sector on the hard drive from having a virus written to it. The other option is **Normal**.

Password on Boot

This setting allows you to require a password to be entered when the system boots up. The options are Enabled (password required) and **Disabled** (password not required).

7-6 Boot

Choose Boot from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. Highlighting a setting with a + or - will expand or collapse that entry. See details on how to change the order and specs of boot devices in the Item Specific Help window. All Boot BIOS settings are described in this section.


PhoenixBIOS Setup - Copyright 1985-2001 Phoenix Technologies Ltd.
Main Advanced Security Boot Exit
+Removable Devices
CD-ROM Drive
+Hard Drive
Item Specific Help
<Tab>, <Shift-Tab>, or <Enter> selects field.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Previous Values

+Removable Devices

Highlight and press <Enter> to expand the field. See details on how to change the order and specs of devices in the Item Specific Help window.

CD-ROM Drive

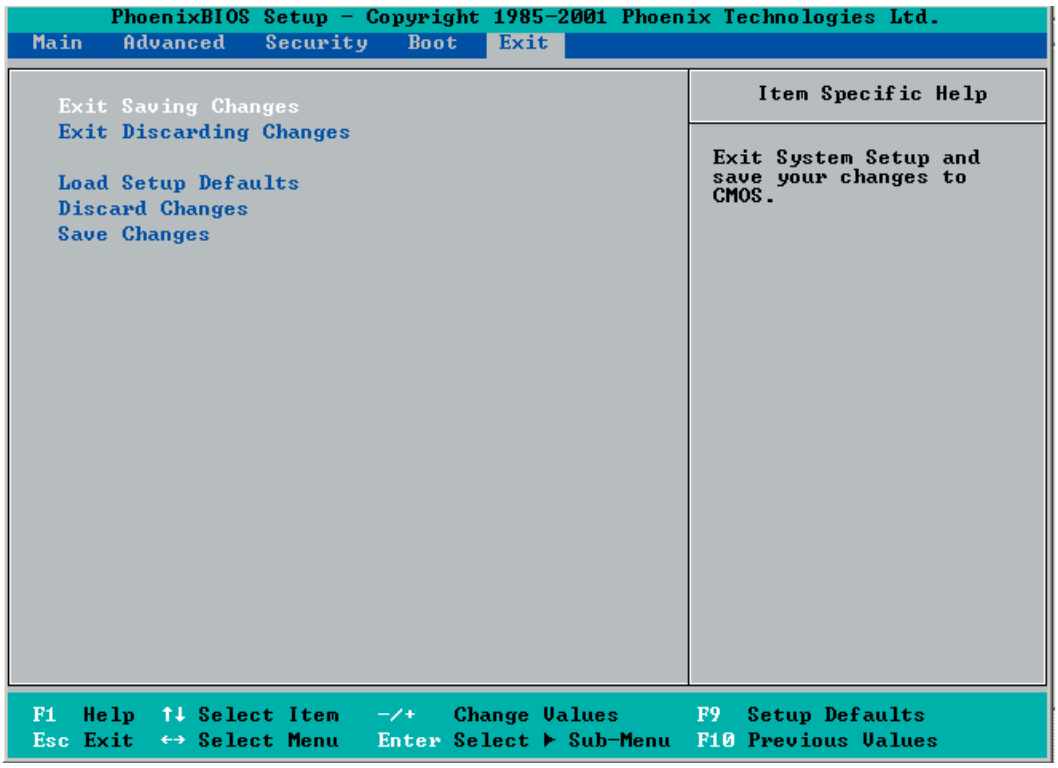
See details on how to change the order and specs of the CD-ROM drive in the Item Specific Help window.

+Hard Drive

Highlight and press <Enter> to expand the field. See details on how to change the order and specs of hard drives in the Item Specific Help window.

7-7 Exit

Choose Exit from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. All Exit BIOS settings are described in this section.


PhoenixBIOS Setup - Copyright 1985-2001 Phoenix Technologies Ltd.
Main Advanced Security Boot Exit
Exit Saving Changes
Exit Discarding Changes
Load Setup Defaults
Discard Changes
Save Changes
Item Specific Help
Exit System Setup and save your changes to CMOS.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

Exit Saving Changes

Highlight this item and hit <Enter> to save any changes you made and to exit the BIOS Setup utility.

Exit Discarding Changes

Highlight this item and hit <Enter> to exit the BIOS Setup utility without saving any changes you may have made.

Load Setup Defaults

Highlight this item and hit <Enter> to load the default settings for all items in the BIOS Setup. These are the safest settings to use.

Discard Changes

Highlight this item and hit <Enter> to discard (cancel) any changes you made. You will remain in the Setup utility.

Save Changes

Highlight this item and hit <Enter> to save any changes you made. You will remain in the Setup utility.

Notes

Appendix A

BIOS POST Codes

This section lists the POST (Power On Self Test) codes for the PhoenixBIOS. POST codes are divided into two categories: recoverable and terminal.

Recoverable POST Errors

When a recoverable type of error occurs during POST, the BIOS will display an POST code that describes the problem. BIOS may also issue one of the following beep codes:

1 long and two short beeps - video configuration error
1 continuous long beep - overheat (Overheat LED will be on)
1 long beep and 1 short pause - memory not detected

Terminal POST Errors

If a terminal type of error occurs, BIOS will shut down the system. Before doing so, BIOS will write the error to port 80h, attempt to initialize video and write the error in the top left corner of the screen.

The following is a list of codes that may be written to port 80h.

POST Code	Description
02h	Verify Real Mode
03h	Disable Non-Maskable Interrupt (NMI)
04h	Get CPU type
06h	Initialize system hardware
07h	Disable shadow and execute code from the ROM.
08h	Initialize chipset with initial POST values
09h	Set IN POST flag
0Ah	Initialize CPU registers
0Bh	Enable CPU cache
0Ch	Initialize caches to initial POST values
0Eh	Initialize I/O component
0Fh	Initialize the local bus IDE
10h	Initialize Power Management
11h	Load alternate registers with initial POST values
12h	Restore CPU control word during warm boot
13h	Initialize PCI Bus Mastering devices
14h	Initialize keyboard controller
16h	1-2-2-3 BIOS ROM checksum
17h	Initialize cache before memory Auto size

POST Code	Description
18h	8254 timer initialization
1Ah	8237 DMA controller initialization
1Ch	Reset Programmable Interrupt Controller
20h	1-3-1-1 Test DRAM refresh
22h	1-3-1-3 Test 8742 Keyboard Controller
24h	Set ES segment register to 4 GB
28h	Auto size DRAM
29h	Initialize POST Memory Manager
2Ah	Clear 512 kB base RAM
2Ch	1-3-4-1 RAM failure on address line ***xxxx****
2Eh	1-3-4-3 RAM failure on data bits ***xxxx**** of low byte of memory bus
2Fh	Enable cache before system BIOS shadow
32h	Test CPU bus-clock frequency
33h	Initialize Phoenix Dispatch Manager
36h	Warm start shut down
38h	Shadow system BIOS ROM
3Ah	Auto size cache
3Ch	Advanced configuration of chipset registers
3Dh	Load alternate registers with CMOS values
41h	Initialize extended memory for RomPilot
42h	Initialize interrupt vectors
45h	POST device initialization
46h	2-1-2-3 Check ROM copyright notice
47h	Initialize I20 support
48h	Check video configuration against CMOS
49h	Initialize PCI bus and devices
4Ah	Initialize all video adapters in system
4Bh	QuietBoot start (optional)
4Ch	Shadow video BIOS ROM
4Eh	Display BIOS copyright notice
4Fh	Initialize MultiBoot
50h	Display CPU type and speed
51h	Initialize EISA board
52h	Test keyboard
54h	Set key click if enabled
55h	Enable USB devices
58h	2-2-3-1 Test for unexpected interrupts
59h	Initialize POST display service
5Ah	Display prompt "Press F2 to enter SETUP"
5Bh	Disable CPU cache

POST Code	Description
5Ch	Test RAM between 512 and 640 kB
60h	Test extended memory
62h	Test extended memory address lines
64h	Jump to UserPatch1
66h	Configure advanced cache registers
67h	Initialize Multi Processor APIC
68h	Enable external and CPU caches
69h	Setup System Management Mode (SMM) area
6Ah	Display external L2 cache size
6Bh	Load custom defaults (optional)
6Ch	Display shadow-area message
6Eh	Display possible high address for UMB recovery
70h	Display error messages
72h	Check for configuration errors
76h	Check for keyboard errors
7Ch	Set up hardware interrupt vectors
7Dh	Initialize Intelligent System Monitoring
7Eh	Initialize coprocessor if present
80h	Disable onboard Super I/O ports and IRQs
81h	Late POST device initialization
82h	Detect and install external RS232 ports
83h	Configure non-MCD IDE controllers
84h	Detect and install external parallel ports
85h	Initialize PC-compatible PnP ISA devices
86h	Re-initialize onboard I/O ports.
87h	Configure Motherboard Configurable Devices (optional)
88h	Initialize BIOS Data Area
89h	Enable Non-Maskable Interrupts (NMIs)
8Ah	Initialize Extended BIOS Data Area
8Bh	Test and initialize PS/2 mouse
8Ch	Initialize floppy controller
8Fh	Determine number of ATA drives (optional)
90h	Initialize hard-disk controllers
91h	Initialize local-bus hard-disk controllers
92h	Jump to UserPatch2
93h	Build MPTABLE for multi-processor boards
95h	Install CD ROM for boot
96h	Clear huge ES segment register
97h	Fix up Multi Processor table
98h	1-2 Search for option ROMs. One long, two short beeps on checksum failure

POST Code	Description
99h	Check for SMART Drive (optional)
9Ah	Shadow option ROMs
9Ch	Set up Power Management
9Dh	Initialize security engine (optional)
9Eh	Enable hardware interrupts
9Fh	Determine number of ATA and SCSI drives
A0h	Set time of day
A2h	Check key lock
A4h	Initialize typematic rate
A8h	Erase F2 prompt
AAh	Scan for F2 key stroke
ACh	Enter SETUP
AEh	Clear Boot flag
B0h	Check for errors
B1h	Inform RomPilot about the end of POST.
B2h	POST done - prepare to boot operating system
B4h	1 One short beep before boot
B5h	Terminate QuietBoot (optional)
B6h	Check password (optional)
B7h	Initialize ACPI BIOS
B9h	Prepare Boot
BAh	Initialize SMBIOS
BBh	Initialize PnP Option ROMs
BCh	Clear parity checkers
BDh	Display MultiBoot menu
BEh	Clear screen (optional)
BFh	Check virus and backup reminders
C0h	Try to boot with INT 19
C1h	Initialize POST Error Manager (PEM)
C2h	Initialize error logging
C3h	Initialize error display function
C4h	Initialize system error handler
C5h	PnPnd dual CMOS (optional)
C6h	Initialize note dock (optional)
C7h	Initialize note dock late
C8h	Force check (optional)
C9h	Extended checksum (optional)
CAh	Redirect Int 15h to enable remote keyboard
CBh	Redirect Int 13h to Memory Technologies
	Devices such as ROM, RAM, PCMCIA, and serial disk
CCh	Redirect Int 10h to enable remote serial video

POST Code	Description
CDh	Re-map I/O and memory for PCMCIA
CEh	Initialize digitizer and display message
D2h	Unknown interrupt

The following are for boot block in Flash ROM

POST Code	Description
E0h	Initialize the chipset
E1h	Initialize the bridge
E2h	Initialize the CPU
E3h	Initialize system timer
E4h	Initialize system I/O
E5h	Check force recovery boot
E6h	Checksum BIOS ROM
E7h	Go to BIOS
E8h	Set Huge Segment
E9h	Initialize Multi Processor
EAh	Initialize OEM special code
EBh	Initialize PIC and DMA
ECh	Initialize Memory type
EDh	Initialize Memory size
EEh	Shadow Boot Block
EFh	System memory test
F0h	Initialize interrupt vectors
F1h	Initialize Run Time Clock
F2h	Initialize video
F3h	Initialize System Management Manager
F4h	Output one beep
F5h	Clear Huge Segment
F6h	Boot to Mini DOS
F7h	Boot to Full DOS

If the BIOS detects error 2C, 2E, or 30 (base 512K RAM error), it displays an additional word-bitmap (***xxxx***) indicating the address line or bits that failed. For example, “2C 0002” means address line 1 (bit one set) has failed. “2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits. The BIOS also sends the bitmap to the port-80 LED display. It first displays the checkpoint code, followed by a delay, the high-order byte, another delay, and then the loworder byte of the error. It repeats this sequence continuously.

Notes

Appendix B

Software Installation

B-1 Introduction to the Adaptec SATA RAID Controller

Serial ATA (SATA)

Serial ATA(SATA) is a physical storage interface. It uses a single cable with a minimum of four wires to create a point-to-point connection between devices. It is a serial link which supports SATA Transfer rates from 150MBps. Because the serial cables used in SATA are thinner than the traditional cables used in Parallel ATA(PATA), SATA systems have better airflow and can be installed in smaller chassis than Parallel ATA. In addition, the cables used in PATA can only extend to 40cm long, while Serial ATA cables can extend up to one meter. Overall, Serial ATA provides better functionality than Parallel ATA.

Introduction to the Intel 6300ESB I/O Controller Hub

Located in the South Bridge of the Intel E7520 Chipset, the 6300ESB I/O Controller Hub provides the I/O subsystem with access to the rest of the system. It supports 2-channel Ultra ATA/100 Bus Master IDE controller (PATA) and two Serial ATA (SATA) Host Controllers, which support up to two Serial ATA ports and up to two RAID drives. The 6300ESB I/O Controller Hub supports the following Parallel ATA (PATA) and Serial (SATA) device configurations:

ATA Operating Mode

You can select from the following two modes: Combined Mode and Enhanced Mode.

Combined Mode

In this mode, system BIOS assigns the traditional IRQ 14 and IRQ 15 for the use of HDD. Up to 4 ATA devices are supported by this mode.

Within the Combined Mode, the following three modes are supported:

*Non-Combined Mode: Parallel ATA only:with the maximum of 4 devices supported;

*Non-Combined Mode: Serial ATA only:with the maximum of 2 devices supported;

*Combined Mode: SATA devices and PATA: with the support of 2 devices each (total: 4 devices maximum). (For IDE/SATA configurations, please refer to the table below.)

Primary Master(=PM)	Yes	Yes	No	No	No	No
Primary Slave(=PS)	Yes	No	Yes	No	No	No
Secondary Master(=SM)	Yes	No	No	Yes	No	No
Secondary Slave(=SS)	Yes	No	No	No	Yes	No
SATA Port0	No	SM	SM	PM	PM	PM
SATA Port1	No	SS	SS	PS	PS	PS
*Note: (No=Not Present, Yes=Present) Also, if Logical Primary is selected, the IDE channels are no longer available.						

Enhanced Mode

In this mode, system BIOS will automatically search for all available IRQs for the use of HDD. For newer Operating Systems that support the Enhanced Mode, such as Windows XP, Windows 2000, and Windows 2003, you can set SATA and PATA to the Enhanced Mode. (*The newer Operating Systems can accommodate both Enhanced Mode and Combined Mode and support up to 6 ATA devices.)

(*Please refer to the "Advanced Chipset Control" under the "Advanced" Setup in the BIOS for the selection of Combined Mode or Enhanced Mode,).

Configuring BIOS settings for the SATA RAID Functions (Enhanced Mode)

1. Press the <Del> key during system bootup to enter the BIOS Setup Utility. (If it is the first time to power on the system, we recommend that you load the Optimized Default Settings. If you have already done so, please skip to Step 3.

2. Use the arrow keys to select the "Exit" Menu. Once in the "Exit" Menu, scroll down the menu to select the item- "Load System Default" and press the <Enter> key. Select "OK" to confirm the selection. Press the <Enter> key to load the default settings to the BIOS.

3. Use the arrow keys to select the "Main" Menu in the BIOS.

4. Scroll down to "SATA RAID Enable" and press the <Enter> Key to select this option.

5. From this submenu, select "Enable" and press <Enter>.

6. Tap the <Esc> key and scroll down to "Exit". Select "Save and Exit" from the "Exit" menu. Press the <Enter> key to save the changes and exit the BIOS.

7. Once you've exited the BIOS Utility, the system will re-boot.

8. During the system startup, press the <Ctrl> and the <A> keys simultaneously to run the Adaptec RAID Configuration Utility when prompted by the following message:

Press <Ctrl><A> for Adaptec RAID Configuration Utility.

Adaptec SATA with HostRAID Controller Driver

Adaptec's Embedded Serial ATA RAID with HostRAID controller adds RAID functionality to the Serial ATA I/O controller by supporting RAID 0 (Striping) or RAID 1 (Mirroring) to enhance the industry's pioneer PCI-to-e host controller products. RAID striping (RAID 0) can greatly improve hard disk I/O performance because of its capability in striping data across multiple drives. RAID mirroring (RAID 1) allows the data to be simultaneously written to two drives, so critical data is always available even if a single hard disk fails. Due to the built-in functionality, the X6DH3-G2 is specially designed to keep pace with the increasing performance demands of computer systems by improving disk I/O throughput and providing data accessibility regardless of a single disk failure. By incorporating the Adaptec Embedded Serial ATA into the motherboard design, Supermicro's X6DH3-G2 offers the user with the benefits of SATARAID without the high costs associated with hardware RAID applications.

(*Note: For Adaptec's RAID Driver Installation Instructions, please refer to the Adaptec RAID Controller User's Guide: "Emb_SA_RAID_UG.pdf" in the CD that came with this motherboard. You can also download a copy of Adaptec's User's Guide from our web site at www.supermicro.com.)

Using the Adaptec RAID Configuration Utility (ARC)

The Adaptec RAID Configuration Utility is an embedded BIOS Utility, including:

*Array Configuration Utility: Use this utility when you want to create, configure and manage arrays.

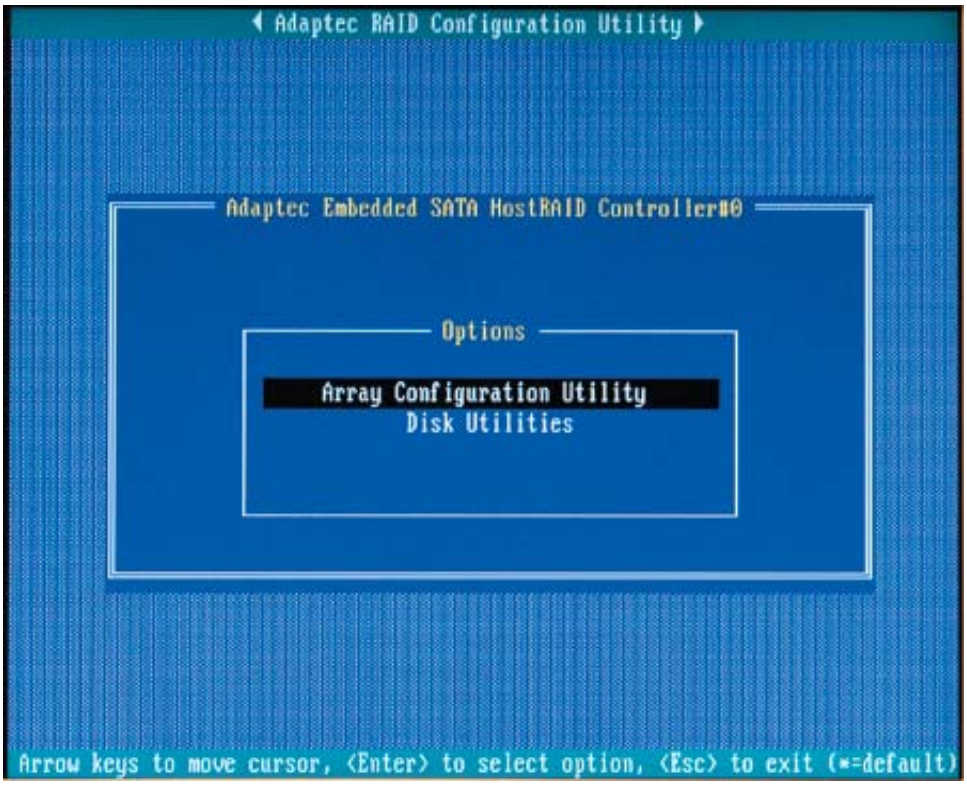
* Disk Utilities: Use this option to format or verify disks.

To run the Adaptec RAID Configuration Utility, you will need to enable the RAID function in the system BIOS (refer to Chapter 4 for System BIOS Configurations), and then, press the <Ctrl> and <A> keys simultaneously when prompted to do so during the system startup. (Refer to the previous page for detailed instructions.)

Note: To select an option, use the arrow keys to highlight the item and then press the <Enter> key to select it. To return to the previous menu, press the <ESC> key.

A. Using the Array Configuration Utility (ACU)

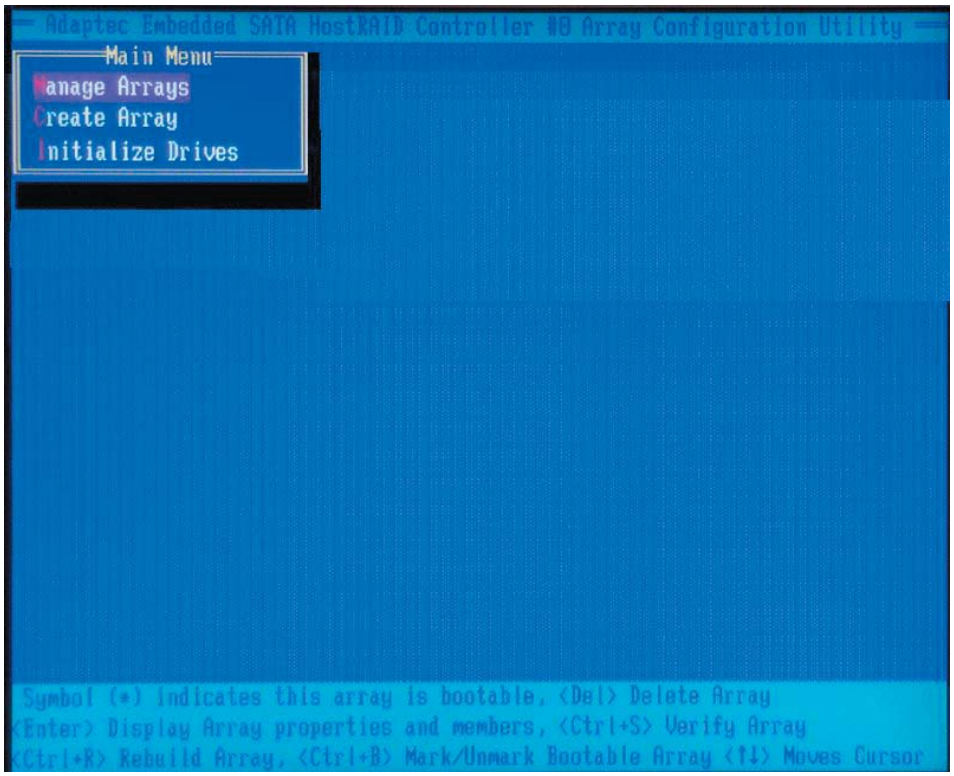
The Array Configuration Utility (ACU) enables you to create, manage, and delete arrays from the controller's BIOS, add and delete spare drives, and initialize drives. During the system startup, press <Ctrl> and <A> key simultaneously, and the main menu will appear.


Adaptec RAID Configuration Utility
Adaptec Embedded SATA HostRAID Controller#0
Options
Array Configuration Utility
Disk Utilities
Arrow keys to move cursor, <Enter> to select option, <Esc> to exit (*=default)

Managing Arrays

Select this option to view array properties, and delete arrays. The following sections describe the operations Of "Managing Arrays".

To select this option, use the arrow keys and the <enter> key to select "Managing Arrays" from the main menu (as shown above).


Adaptec Embedded SATA HostRAID Controller #0 Array Configuration Utility
Main Menu
Manage Arrays
Create Array
Initialize Drives
Symbol (*) indicates this array is bootable, <Del> Delete Array
<Enter> Display Array properties and members, <Ctrl+S> Verify Array
<Ctrl+R> Rebuild Array, <Ctrl+B> Mark/Unmark Bootable Array <↑↓> Moves Cursor

Viewing Array Properties

To view the properties of an existing array:

1. At the BIOS prompt, press **Ctrl+A**.

2. From the ARC menu, select **Array Configuration Utility (ACU)**.

3. From the ACU menu, select **Manage Arrays** (as shown on the previous screen.)

4. From the List of Arrays dialog box, select the array you want to view and press **Enter**.

The Array Properties dialog box appears, showing detailed information on the array. The physical disks associated with the array are displayed here.

5. Press **Esc** to return to the previous menu.

Deleting Arrays

Warning: Back up the data on an array before you delete it to prevent the loss of data. Deleted arrays cannot be restored.

To delete an existing array:

1. Turn on your computer and press **Ctrl+A** when prompted to access the ARC utility.

2. From the ARC main menu, select **Array Configuration Utility (ACU)**.

3. From the ACU menu, select **Manage Arrays**.

4. Select the array you wish to delete and press **Delete**.

5. In the Array Properties dialog box, select **Delete** and press **Enter**. The following prompt is displayed:

Warning!! Deleting the array will render array unusable. Do you want to delete the array?(Yes/No):

***RAID 1 only*—the following prompt is also displayed:**

Deleting the partition will result in data loss! Do you also want to delete the partition? (Yes/No):

6. Press **Yes** to delete the array or partition or **No** to return to the previous menu.

7. Press **Esc** to return to the previous menu.

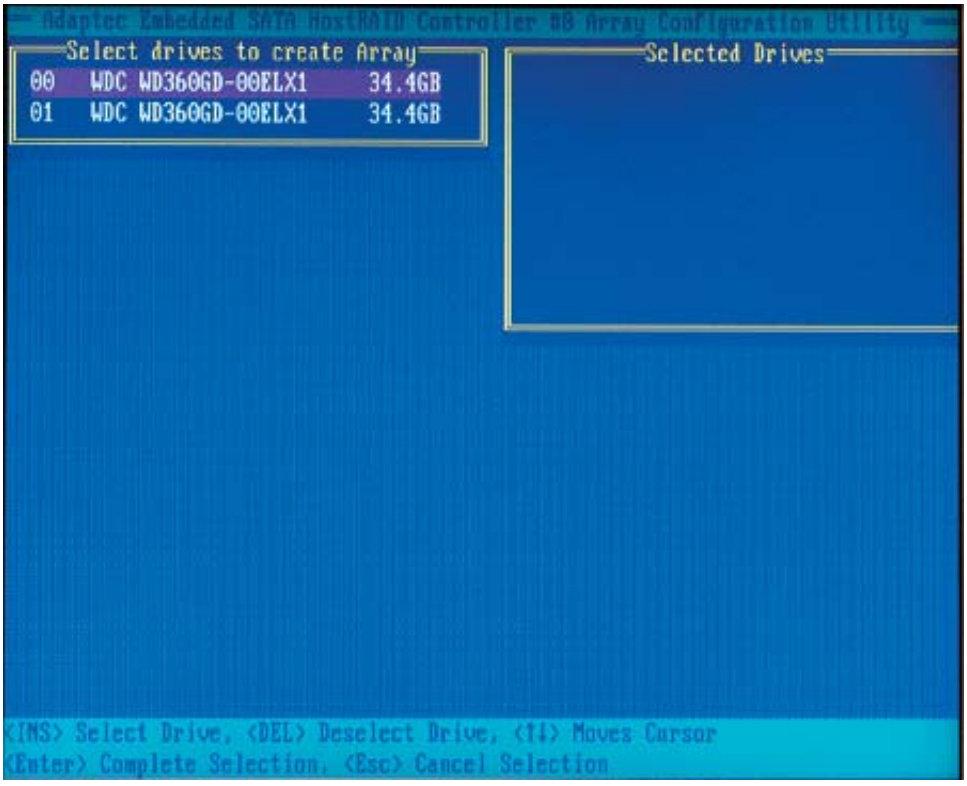
Creating Arrays

Before creating arrays, make sure the disks for the array are connected and installed in your system. Note that disks with no usable space, or disks that are un-initialized are shown in gray and cannot be used. See *Initializing Disk Drives*.

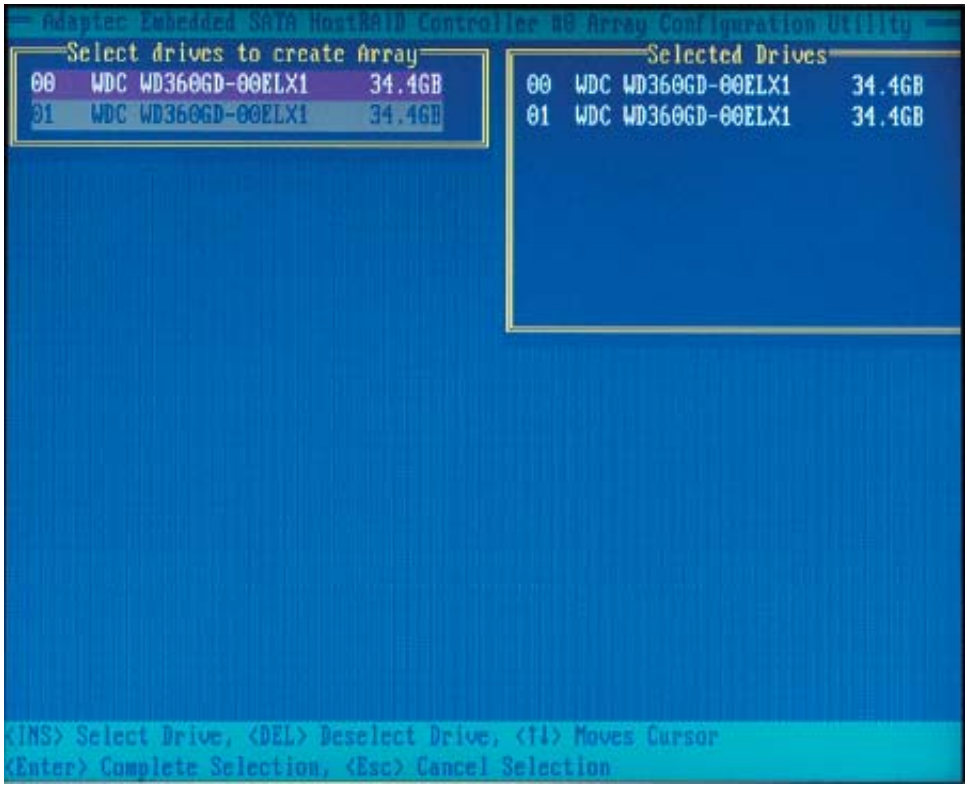
To create an array:

1. Turn on your computer and press **Ctrl+A** when prompted to access the ARC utility.
2. From the ARC menu, select **Array Configuration Utility Main Menu (ACU)** (as shown on the first screen on page B-5).
3. From the ACU menu, select **Create Array**.
4. Select the disks for the new array and press Insert (as the screen shown below).

Note: To deselect any disk, highlight the disk and press **Delete**.


Select drives to create Array
00 WDC WD360GD-00ELX1 34.4GB
01 WDC WD360GD-00ELX1 34.4GB
Selected Drives
<INS> Select Drive, <DEL> Deselect Drive, <↑↓> Moves Cursor
<Enter> Complete Selection, <Esc> Cancel Selection

5. Press **Enter** when both disks for the new array are selected. The Array Properties menu displays (as the screen shown below).


Adaptec Embedded SATA HostRAID Controller BB Array Configuration Utility
Select drives to create Array
00 WDC WD360GD-00ELX1 34.4GB
01 WDC WD360GD-00ELX1 34.4GB
Selected Drives
00 WDC WD360GD-00ELX1 34.4GB
01 WDC WD360GD-00ELX1 34.4GB
<INS> Select Drive, <DEL> Deselect Drive, <↑↓> Moves Cursor
<Enter> Complete Selection, <Esc> Cancel Selection

Assigning Array Properties

Once you've create a new array, you are ready to assign the properties to the array.

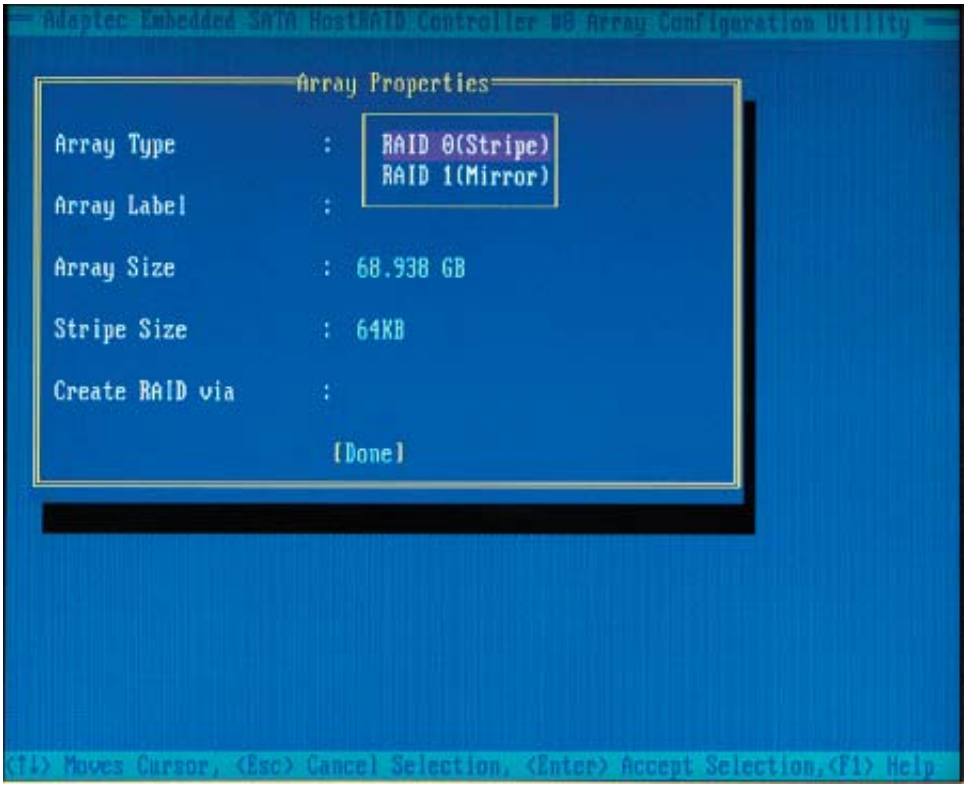
Caution: Once the array is created and its properties are assigned, you cannot change the array properties using the ACU. You will need to use the Adaptec Storage Manager - Browser Edition. (Refer to Adaptec's User's Guide in the enclosed CD.)

To assign properties to the new array:

1. In the Array Properties menu (as shown in the screen below), select an array type and press **Enter**.

Note that only the available array types: RAID 0, and RAID1, are displayed on the screen. (*RAID 0 or RAID 1 requires two drives.

2. Under the item "**Arrays Label**", type in an label and press **Enter**. (The label shall not be more than 15 characters.



3. For RAID 0, select the desired stripe size. (*Note: Available stripe sizes are 16, 32, and 64 KB-default. It is recommended that you *do not* change the default setting.)

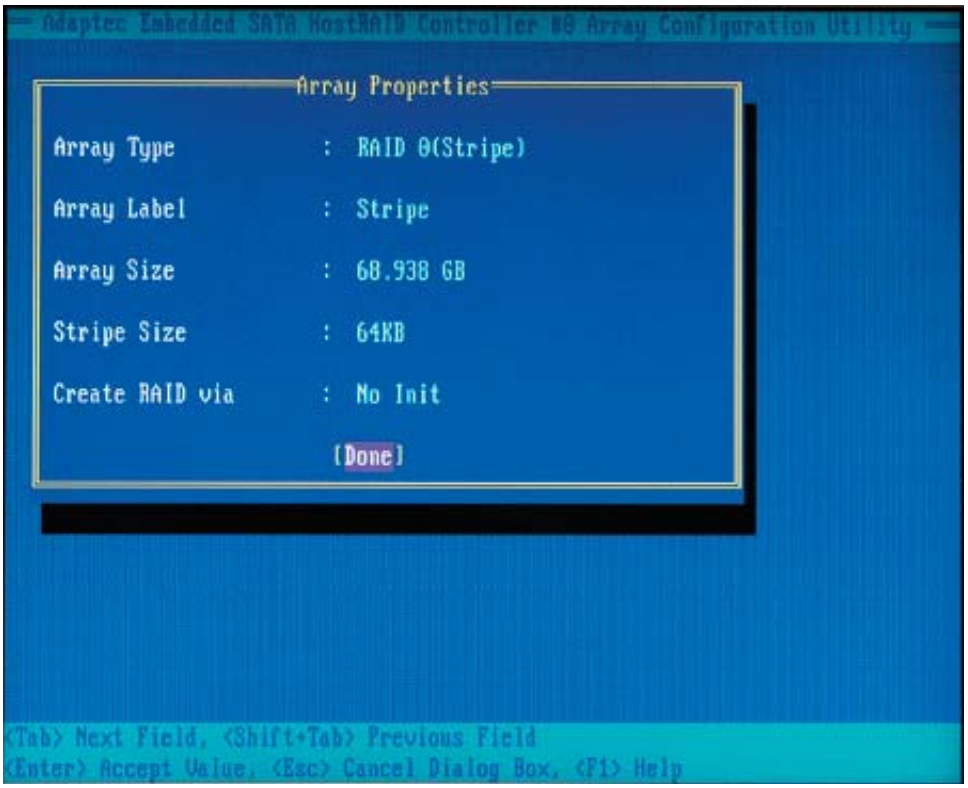
4. The item: **"Create RAID via"** allows you to select between the different creating methods for RAID 0 and RAID 1.

The following table gives examples of when each is appropriate.

Raid Level	Create Via	When Appropriate
RAID 0	No Init	Creating a RAID 0 on new drives
RAID 0	Migrate (*Note)	Creating a RAID 0 from one new drive and one drive with data you wish to preserve
RAID 1	Build1	Any time you wish to create a RAID 1, but especially if you have data on one drive that you wish to preserve
RAID 1	Clear	Creating a RAID 1 on new drives, or when you want to ensure that the array contains no data after creation.
RAID 1	Quick	Fastest way to create a RAID 1. Appropriate when using new drives
RAID 1	Init	

Note: If you select Migrate for RAID 0, or Build for RAID 1, you will be asked to select the source drive. The contents of the source drive will be preserved. However, the data on the new drive will be lost.

5. When you are finished, press **Done (as the screen shown below)**.



Notes:

1. Before adding a new drive to an array, back up any data contained on the new drive. Otherwise, all data will be lost.

2. If you stop the Build or Clear process on a RAID 1 from ACU, you can restart it by pressing Ctrl+R.

3. A RAID 1 created using the Quick Init option may return some data mis-compares if you later run a consistency check. This is normal and is not a cause for concern.

4. The ACU allows you to use drives of different sizes in a RAID . However, during a build operation, only the smaller drive can be selected as the source or first drive.

5. When migrating from single volume to RAID 0, migrating from a larger drive to a smaller drive is allowed. However, the destination drive must be at least half the capacity of the source drive.

6. Adaptec does not recommend that you migrate or build an array on Windows dynamic disks (volumes), as it will result in data loss.

Warning: Do not interrupt the creation of a RAID 0 using the Migrate option. If you do, you will not be able to restart, or to recover the data that was on the source drive.

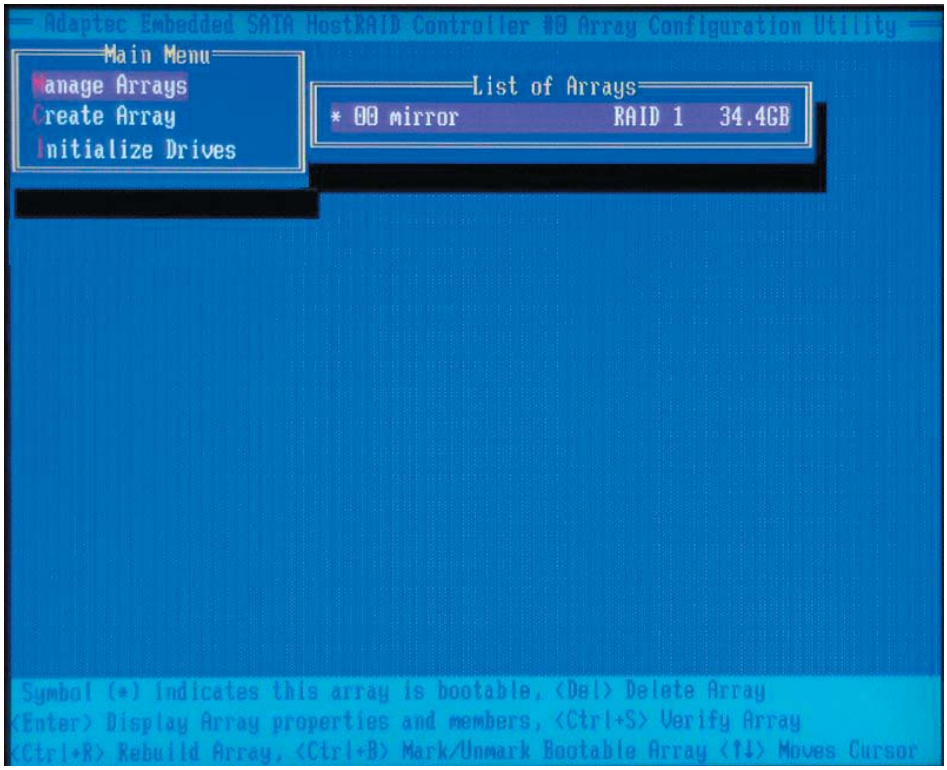
Adding a Bootable Array

To make an array bootable:

1. From the Main menu, select **Manage Arrays.**

2. From the List of Arrays, select the array you want to make bootable, and press **Ctrl+B.**

3. Enter Y to create a bootable array when the following message is displayed: "This will make all other existing bootable array non-bootable. Do you want to make this array bootable? (Yes/No):" A bootable array will then be created and an asterisk will appear next to the bootable array (as shown in the picture below:)


Adaptec Embedded SATA HostRAID Controller #0 Array Configuration Utility
Main Menu
Manage Arrays
Create Array
Initialize Drives
List of Arrays
* 00 mirror RAID 1 34.4GB
Symbol (*) Indicates this array is bootable, <Del> Delete Array
<Enter> Display Array properties and members, <Ctrl+S> Verify Array
<Ctrl+R> Rebuild Array, <Ctrl+B> Mark/Unmark Bootable Array <↑↓> Moves Cursor

Deleting a Bootable Array

To delete a bootable array:

1. From the Main menu, select **Manage Arrays.**

2. From the List of Arrays, select the bootable array you want to delete, and press **Ctrl+B**. (A bootable array is the array marked with an asterisk, as shown in the picture above.)

3. Enter Y to delete a bootable array when the following message is displayed: "The array is already marked bootable. Do you want to make this array as not bootable? (Yes/No):" Then, the bootable array will be deleted and the asterisk will disappear. **Note:** do not use the delete key to delete the bootable array.

Initializing Disk Drives

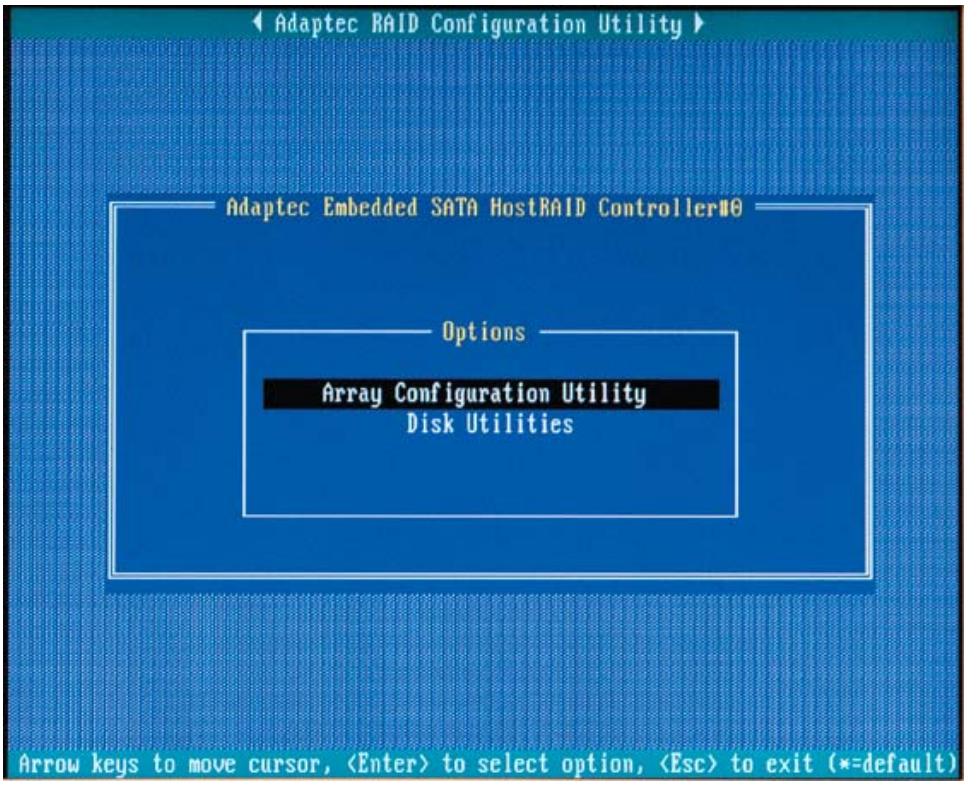
If an installed disk does not appear in the disk selection list for creating a new array, or if it appears grayed out, you may have to initialize it before you can use it as part of an array. Drives attached to the controller must be initialized before they can be used in an array.

Caution: Initializing a disk overwrites the partition table on the disk and makes any data on the disk inaccessible. If the drive is used in an array, you may not be able to use the array again.

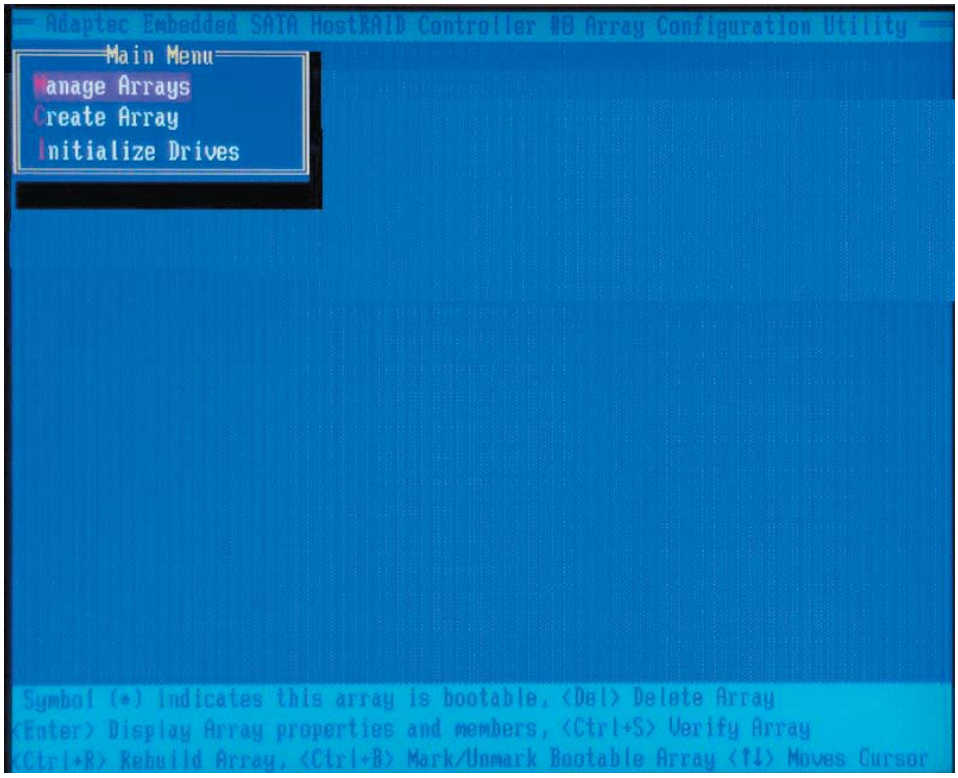
Do not initialize a disk that is part of a boot array. To determine which disks are associated with a particular array, please refer to *Viewing Array Properties.*

To initialize drives:

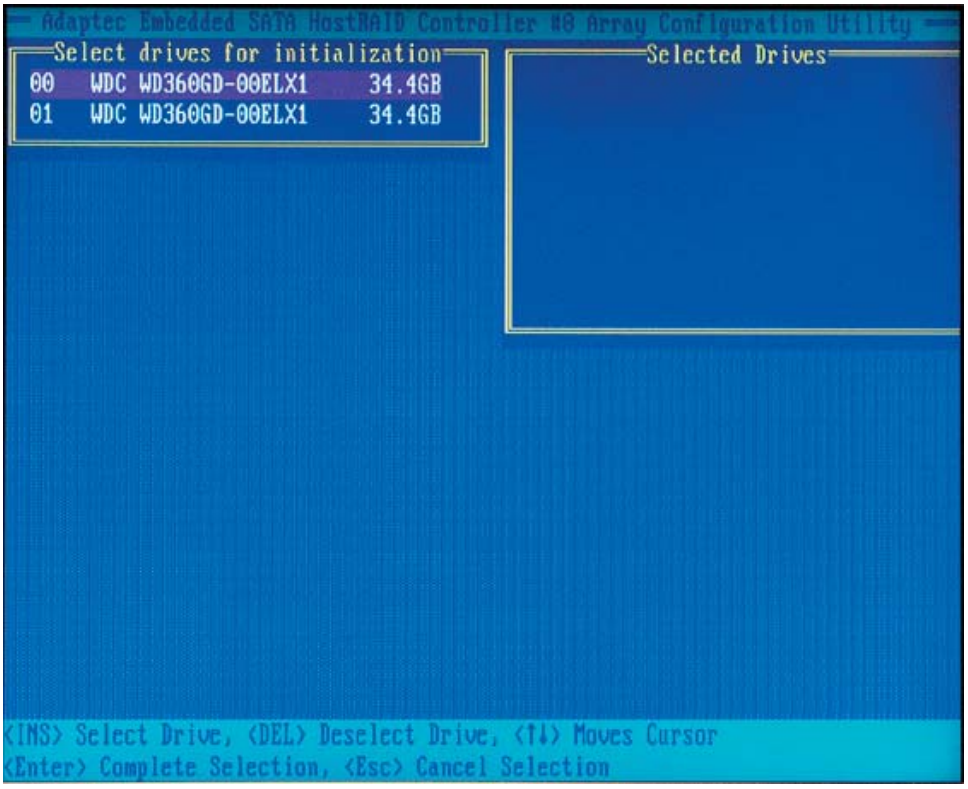
1. Turn on your computer and press **Ctrl+A** when prompted to access the ARC utility.
2. From the ARC menu, select **Array Configuration Utility (ACU)** (as shown in the screen below).


Adaptec RAID Configuration Utility
Adaptec Embedded SATA HostRAID Controller#0
Options
Array Configuration Utility
Disk Utilities
Arrow keys to move cursor, <Enter> to select option, <Esc> to exit (*=default)

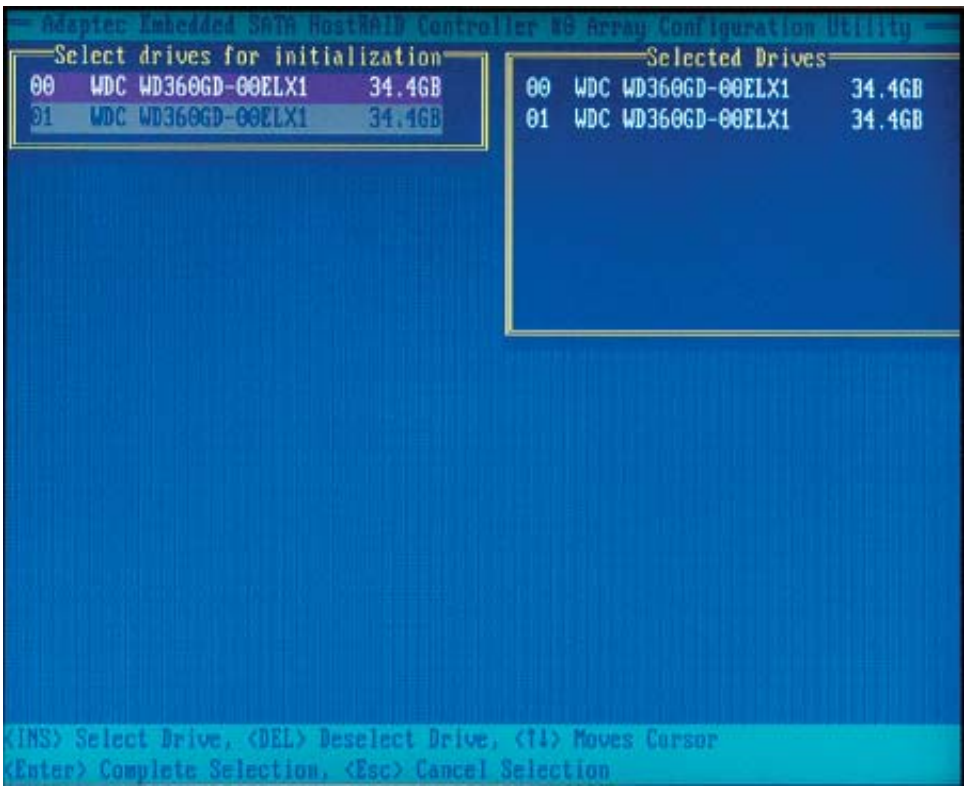
3. Select **Initialize Drives** (as shown in the screen below).


Adaptec Embedded SATA HostRAID Controller #0 Array Configuration Utility
Main Menu
anage Arrays
reate Array
nitialize Drives
Symbol (*) indicates this array is bootable, <Del> Delete Array
<Enter> Display Array properties and members, <Ctrl+S> Verify Array
<Ctrl+R> Rebuild Array, <Ctrl+B> Mark/Unmark Bootable Array <↑↓> Moves Cursor

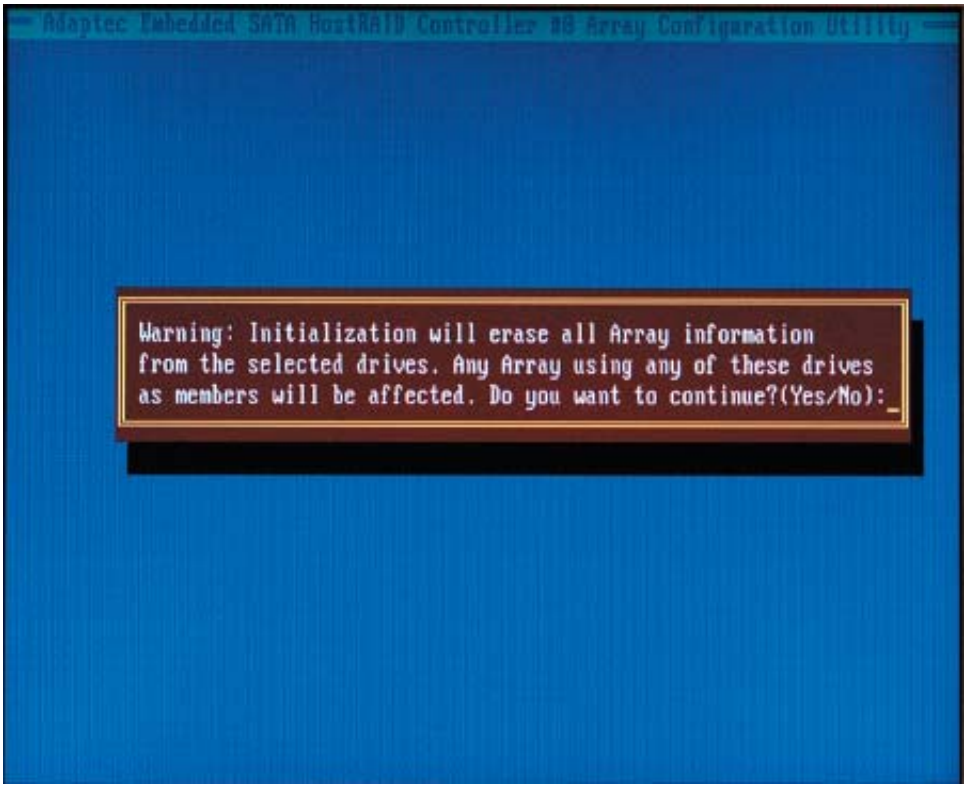
4. Use the up and down arrow keys to select the disk you wish to initialize and press Insert (as shown in the screen below).


Adaptec Embedded SATA HostRAID Controller #0 Array Configuration Utility
Select drives for initialization
00 WDC WD360GD-00ELX1 34.4GB
01 WDC WD360GD-00ELX1 34.4GB
Selected Drives
<INS> Select Drive, <DEL> Deselect Drive, <↑↓> Moves Cursor
<Enter> Complete Selection, <Esc> Cancel Selection

5. Repeat Step 4 so that both drives to be initialized are selected (as shown below).


Adaptec Embedded SATA HostRAID Controller BB Array Configuration Utility
Select drives for initialization
00 WDC WD360GD-00ELX1 34.4GB
01 WDC WD360GD-00ELX1 34.4GB
Selected Drives
00 WDC WD360GD-00ELX1 34.4GB
01 WDC WD360GD-00ELX1 34.4GB
<INS> Select Drive, <DEL> Deselect Drive, <↑↓> Moves Cursor
<Enter> Complete Selection, <Esc> Cancel Selection

6. Press **Enter**.
7. Read the warning message as shown below.


Adaptec Embedded SATA HostRAID Controller BB Array Configuration Utility
Warning: Initialization will erase all Array information
from the selected drives. Any Array using any of these drives
as members will be affected. Do you want to continue?(Yes/No):_

8. Make sure that you have selected the correct disk drives to initialize. If correct, type Y to continue.

Rebuilding Arrays

Note 1: Rebuilding applies to Fault Tolerant array (RAID 1) only.

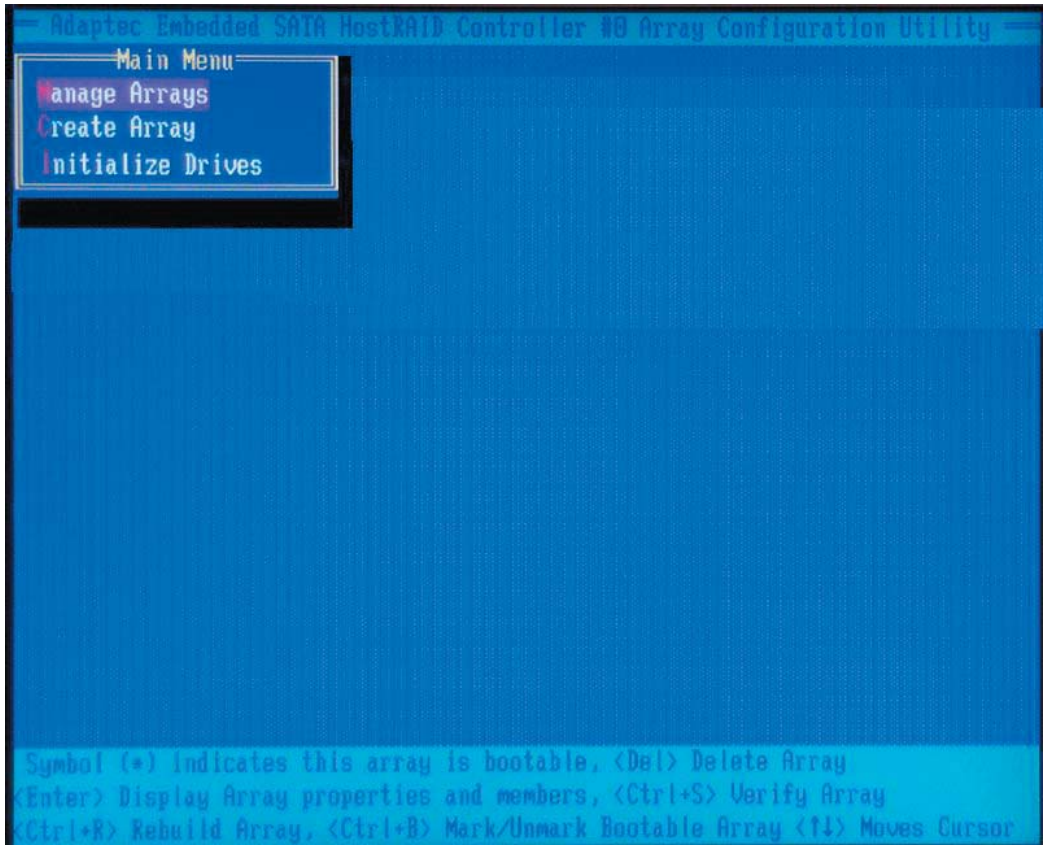
If an array Build process (or initialization) is interrupted or critical with one member missing, you must perform a Rebuild to get the array to Optimal status. For a critical array Rebuild operation, the optimal drive is the source drive.

Note 2: If no spare array exists and a hard disk drive fails, you need to create a spare before you can rebuild an array.

To Rebuild an array:

1. From the Main Menu, select **Manage Arrays** (as shown in the screen below). From the List of Arrays, select the array you want to Rebuild.

2. Press **Ctrl+R** to Rebuild.


Adaptec Embedded SATA HostRAID Controller #0 Array Configuration Utility
Main Menu
Manage Arrays
Create Array
Initialize Drives
Symbol (*) Indicates this array is bootable, <Del> Delete Array
<Enter> Display Array properties and members, <Ctrl+S> Verify Array
<Ctrl+R> Rebuild Array, <Ctrl+B> Mark/Unmark Bootable Array <↑↓> Moves Cursor

Adaptec SAS/SATA with HostRAID Controller Driver

The onboard Adaptec AIC9140W SAS Controller supports two ports. Each port supports up to four SAS/SATA drives.

* The SAS Cable (CBL-097) can only be used with backplanes that support both SAS and SATA.

* If Supermicro's chassis is used, the backplane must be Rev.2.0 or above, which came with gold trims.

* If you want to use this motherboard with Supermicro's SAS Mobile Racks, such as CSE-M28E1, make sure to use Cable CBL-0116. (*Note: Cable CBL-0116 is a corss-over cable, and is not provided with this motherboard.)

Using the Adaptec RAID Configuration Utility (ARC)

The onboard SAS Controller is enabled by default. To disable it, please set Jumper JPS1 to Pins 2-3 (See Page 2-5 for details and jumper location.)

* Upon detecting the SAS Controller BIOS, please make sure that the Adapter WWN address is listed. This is a 16-digit number. If this number is not shown, you will not be able to use the controller.

* Once the WWN address is listed, press the <Ctrl> and <A> keys simultaneously when prompted to access the Adaptec SAS RAID BIOS. **(*Note:** To select an option, use the arrow keys to highlight the item and then press the <Enter> key to select it. To return to the previous menu, press the <ESC> key.)

The Adaptec RAID Configuration Utility is an embedded BIOS Utility, including:

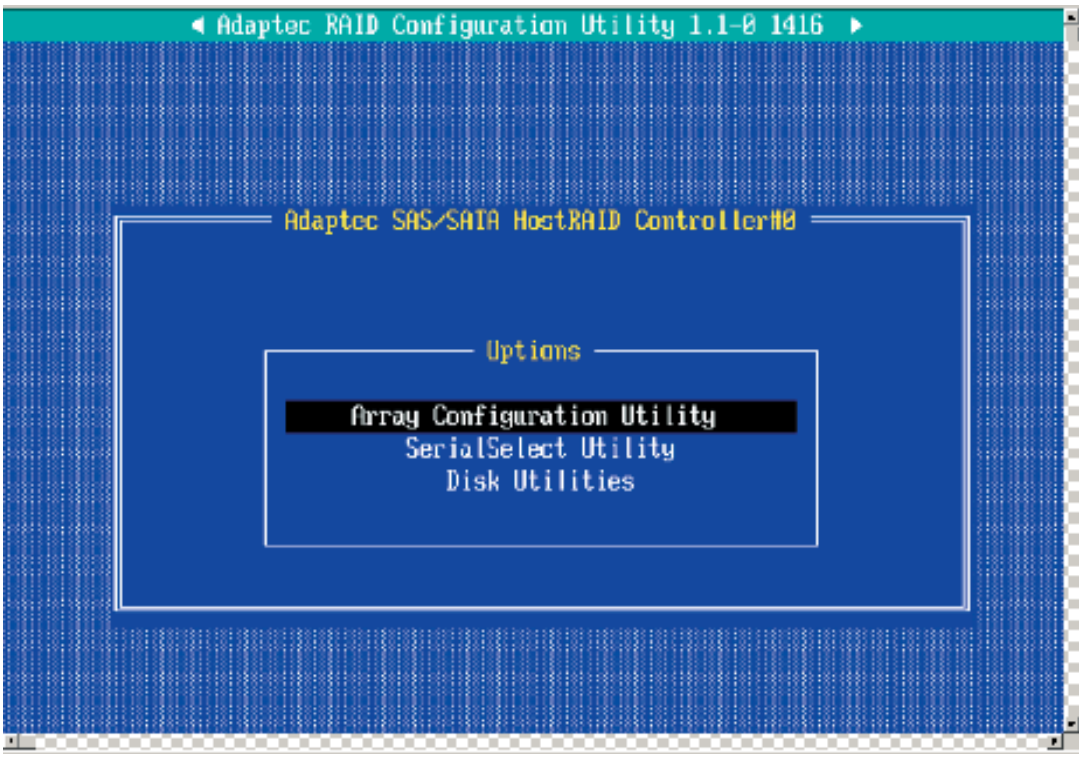
*Array Configuration Utility: Use this utility when you want to create, configure and manage arrays.

* SerialSelect Utility: Use this option to configure SAS/SATA RAID drives.

* Disk Utilities: Use this option to format or verify disks.

A. Using the Array Configuration Utility (ACU)

The Array Configuration Utility (ACU) enables you to create, manage, and delete arrays from the controller's BIOS, add and delete spare drives, and initialize drives. During the system startup, press <Ctrl> and <A> key simultaneously, and the main menu will appear.



Managing Arrays

Select this option to view array properties, and delete arrays. The following sections describe the operations Of "Managing Arrays".

To select this option, use the arrow keys and the <enter> key to select "Managing Arrays" from the main menu.

Viewing Array Properties

To view the properties of an existing array:

1. At the BIOS prompt, press **Ctrl+A**.

2. From the ARC menu, select **Array Configuration Utility (ACU)**.

3. From the ACU menu, select **Manage Arrays** (as shown on the previous screen.)

4. From the List of Arrays dialog box, select the array you want to view and press **Enter**.

The Array Properties dialog box appears, showing detailed information on the array. The physical disks associated with the array are displayed here.

5. Press **Esc** to return to the previous menu.

Deleting Arrays

Warning: Back up the data on an array before you delete it to prevent the loss of data. Deleted arrays cannot be restored.

To delete an existing array:

1. Turn on your computer and press **Ctrl+A** when prompted to access the ARC utility.
2. From the ARC main menu, select **Array Configuration Utility (ACU)**.
3. From the ACU menu, select **Manage Arrays**.
4. Select the array you wish to delete and press **Delete**.
5. In the Array Properties dialog box, select **Delete** and press **Enter**. The following prompt is displayed:
Warning!! Deleting the array will render array unusable. Do you want to delete the array?(Yes/No):

***RAID 1 only*—the following prompt is also displayed:**

Deleting the partition will result in data loss! Do you also want to delete the partition? (Yes/No):

6. Press **Yes** to delete the array or partition or **No** to return to the previous menu.
7. Press **Esc** to return to the previous menu.

Creating Arrays

Before creating arrays, make sure the disks for the array are connected and installed in your system. Note that disks with no usable space, or disks that are uninitialized are shown in gray and cannot be used. See *Initializing Disk Drives*.

To create an array:

1. Turn on your computer and press **Ctrl+A** when prompted to access the ARC utility.
2. From the ARC menu, select **Array Configuration Utility Main Menu (ACU)** (as shown on the first screen on the previus page).
3. From the ACU menu, select **Create Array**.
4. Select the disks for the new array and press Insert.

Note: To deselect any disk, highlight the disk and press **Delete**.

5. Press **Enter** when both disks for the new array are selected. The Array Properties menu displays.

Assigning Array Properties

Once you've create a new array, you are ready to assign the properties to the array. **Caution:** Once the array is created and its properties are assigned, you cannot change the array properties using the ACU. You will need to use the Adaptec Storage Manager - Browser Edition. (Refer to Adaptec's User's Guide in the enclosed CD.)

To assign properties to the new array:

1. In the Array Properties menu, select an array type and press **Enter**. Note that only the available array types: RAID 0, and RAID1, are displayed on the screen. (RAID 0 or RAID 1 requires two drives.)

2. Under the item "**Arrays Label**", type in an label and press **Enter**. The label shall not be more than 15 characters.

3. For RAID 0, select the desired stripe size. Available stripe sizes are 16, 32, and 64 KB-default. It is recommended that you *do not* change the default setting.)
4. The item: **"Create RAID via"** allows you to select between the different creating methods for RAID 0 and RAID 1.

The following table gives examples of when each is appropriate.

Raid Level	Create Via	When Appropriate
RAID 0	No Init	Creating a RAID 0 on new drives
RAID 0	Migrate (*Note)	Creating a RAID 0 from one new drive and one drive with data you wish to preserve
RAID 1	Build1	Any time you wish to create a RAID 1, but especially if you have data on one drive that you wish to preserve
RAID 1	Clear	Creating a RAID 1 on new drives, or when you want to ensure that the array contains no data after creation.
RAID 1	Quick	Fastest way to create a RAID 1. Appropriate when using new drives
RAID 1	Init	

Note: If you select Migrate for RAID 0, or Build for RAID 1, you will be asked to select the source drive. The contents of the source drive will be preserved. However, the data on the new drive will be lost.

5. When you are finished, press **Done.**

Notes:

1. Before adding a new drive to an array, back up any data contained on the new drive. Otherwise, all data will be lost.

2. If you stop the Build or Clear process on a RAID 1 from ACU, you can restart it by pressing Ctrl+R.

3. A RAID 1 created using the Quick Init option may return some data mis-compares if you later run a consistency check. This is normal and is not a cause for concern.

4. The ACU allows you to use drives of different sizes in a RAID . However, during a build operation, only the smaller drive can be selected as the source or first drive.

5. When migrating from single volume to RAID 0, migrating from a larger drive to a smaller drive is allowed. However, the destination drive must be at least half the capacity of the source drive.

6. Adaptec does not recommend that you migrate or build an array on Windows dynamic disks (volumes), as it will result in data loss.

Warning: Do not interrupt the creation of a RAID 0 using the Migrate option. If you do, you will not be able to restart, or to recover the data that was on the source drive.

Adding a Bootable Array

To make an array bootable:

1. From the Main menu, select **Manage Arrays.**

2. From the List of Arrays, select the array you want to make bootable, and press **Ctrl+B.**

3. Enter Y to create a bootable array when the following message is displayed: "This will make all other existing bootable array non-bootable. Do you want to make this array bootable? (Yes/No):" Then, a bootable array will be created. An asterisk will appear next to the bootable array.

Deleting a Bootable Array

To delete a bootable array:

1. From the Main menu, select **Manage Arrays.**

2. From the List of Arrays, select the bootable array (*) you want to delete, and press **Ctrl+B**. (* a bootable array is the array marked with an asterisk.)

3. Enter Y to delete a bootable array when the following message is displayed: "The array is already marked bootable. Do you want to make this array as not bootable? (Yes/No):" Then, the bootable array will be deleted and the asterisk will disappear.
Note: do not use the delete key to delete the bootable array.

Initializing Disk Drives

If an installed disk does not appear in the disk selection list for creating a new array, or if it appears grayed out, you may have to initialize it before you can use it as part of an array. Drives attached to the controller must be initialized before they can be used in an array.

Caution: Initializing a disk overwrites the partition table on the disk and makes any data on the disk inaccessible. If the drive is used in an array, you may not be able to use the array again.

Do not initialize a disk that is part of a boot array. To determine which disks are associated with a particular array, please refer to *Viewing Array Properties.*

To initialize drives:

1. Turn on your computer and press **Ctrl+A** when prompted to access the ARC utility.
2. From the ARC menu, select **Array Configuration Utility (ACU)**.
3. Select **Initialize Drives.**
4. Use the up and down arrow keys to highlight the disk you wish to initialize and press **Insert.**
5. Repeat Step 4 so that both drives to be initialized are selected.
6. Press **Enter**.
7. Read the warning message displayed in the screen.
8. Make sure that you have selected the correct disk drives to initialize. If correct, type Y to continue.

Rebuilding Arrays

Notes: Rebuilding applies to Fault Tolerant array (RAID 1) only. If an array Build process (or initialization) is interrupted or critical with one member missing, you must perform a Rebuild to get the array to Optimal status. For a critical array Rebuild operation, the optimal drive is the source drive.

If no spare array exists and a hard disk drive fails, you need to create a spare before you can rebuild an array.

To Rebuild an array:

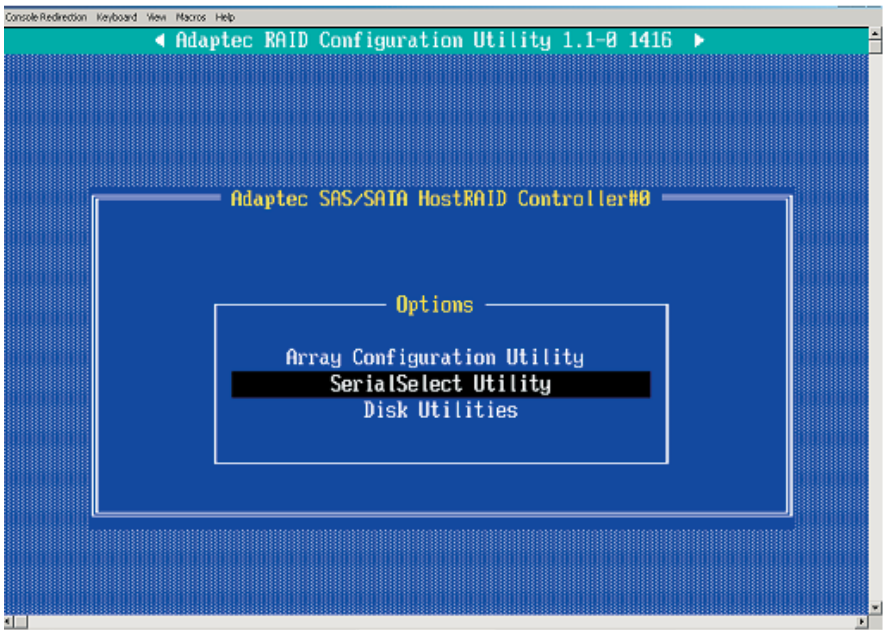
1. From the Main Menu, select **Manage Arrays**. From the List of Arrays, select the array you want to Rebuild.
2. Press **Ctrl+R** to Rebuild.

Using the SerialSelect Utility to Configure SAS Settings

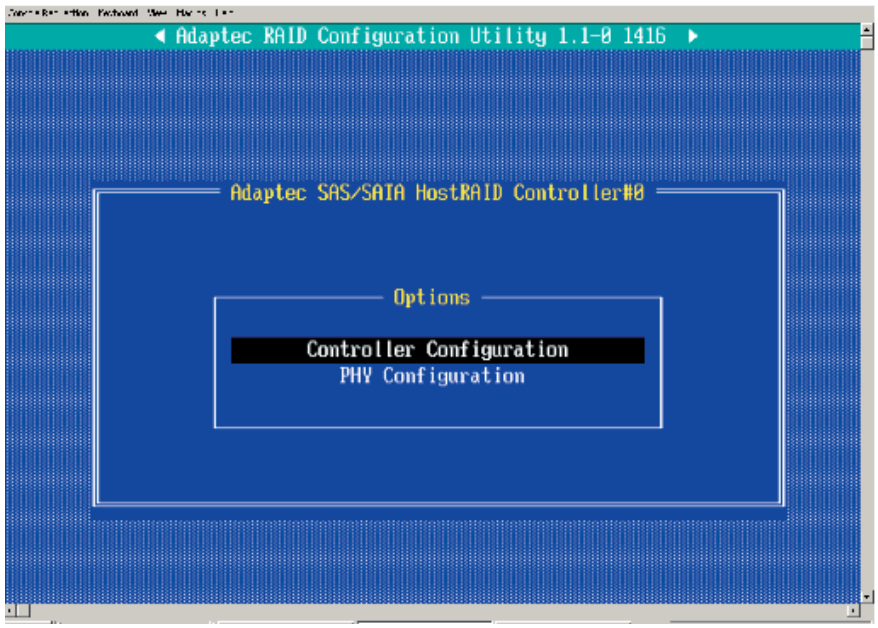
The SerialSelect Utility enables you to configure SAS disk drive settings.

To access the SAS utilities:

1. Turn on your computer and press Ctrl+A when prompted to access the ARC utility. (as shown in the screen below.)

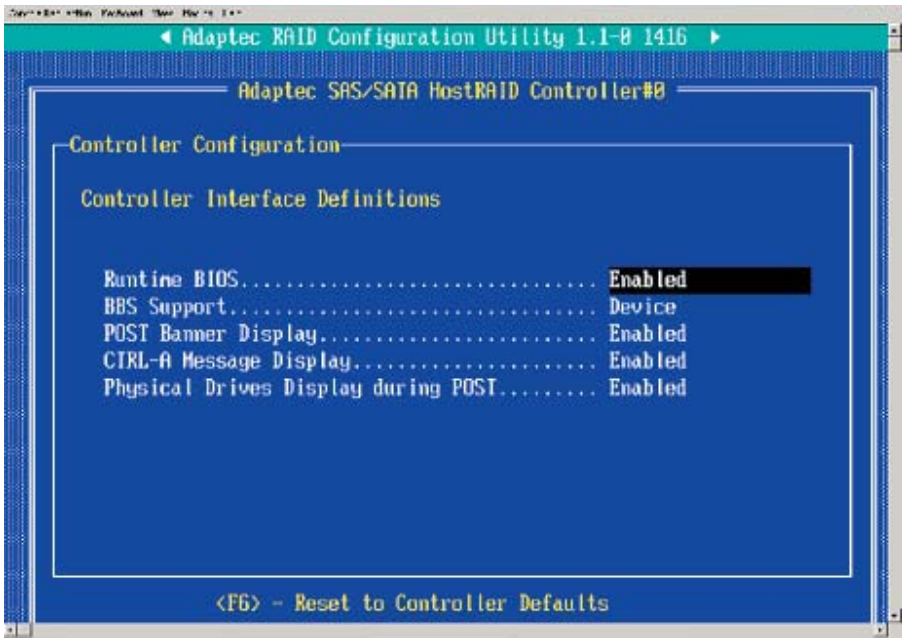


2. Use the arrow keys to select "SerialSelect Utility" and press <Enter> to access the Controller Configuration submenu:



To set the controller configuration:

3. Select "Controller Configuration" and press <Enter> to access the submen as shown below:


Adaptec RAID Configuration Utility 1.1-0 1416
Adaptec SAS/SATA HostRAID Controller#0
Controller Configuration
Controller Interface Definitions
Runtime BIOS..... Enabled
BBS Support..... Device
POST Banner Display..... Enabled
CTRL-A Message Display..... Enabled
Physical Drives Display during POST..... Enabled
<F6> - Reset to Controller Defaults

4. Use the arrow keys to select an item. Then, press <Enter> and the arrow keys to configure the setting for the item selected.

5. To load the default settings, press <F6>. Note: The default setting for each item is listed below:

Runtime BIOS: Enabled,

BBS Support: Device,

POST Banner Display: Enabled,

CTRL-A Message Display: Enabled,

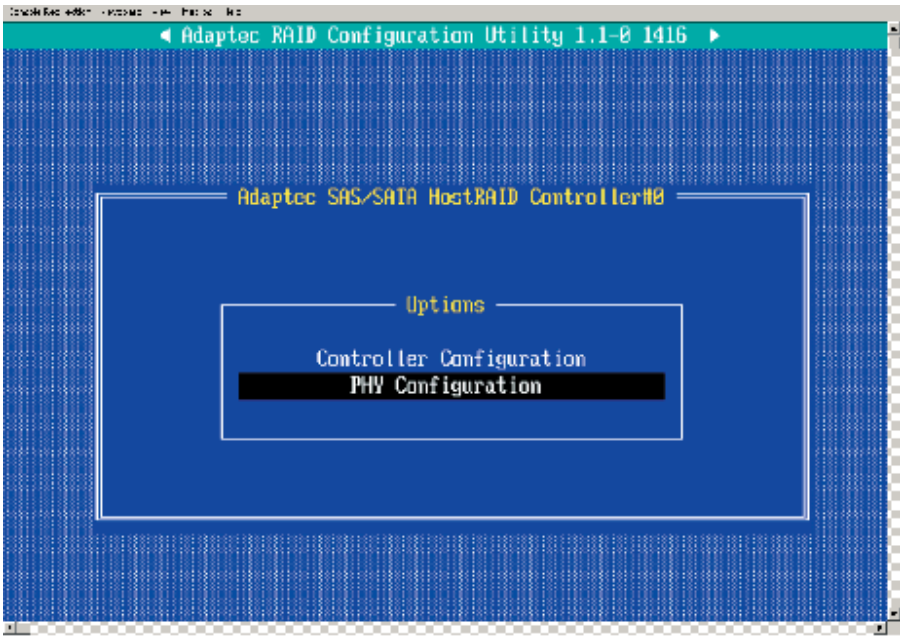
Physical Drives Display during POST: Enabled,)

6. Press <Esc> to return to the previous menu and to exit the utility.

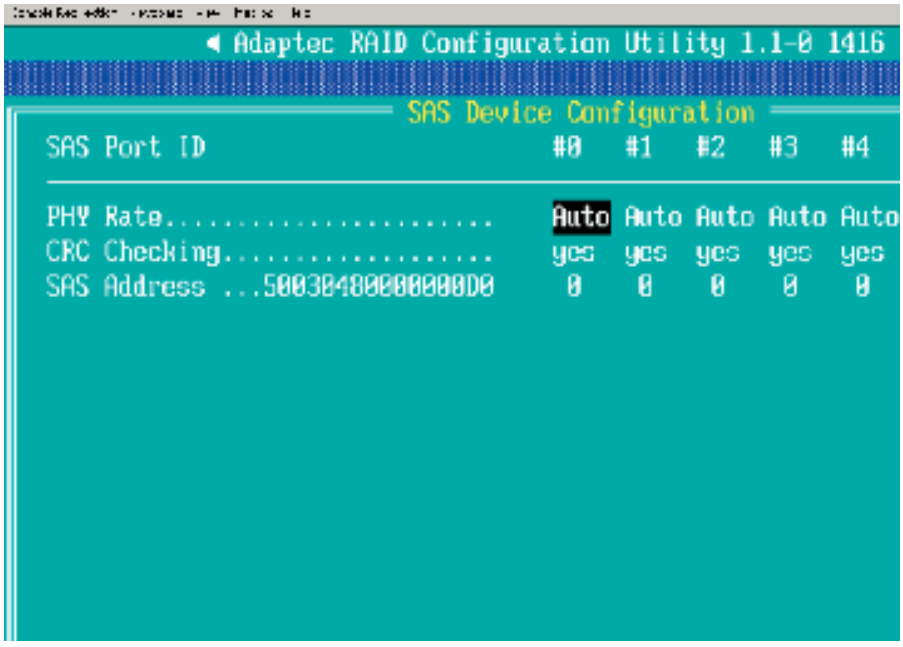
To Set the Physical Configuration:

1. Turn on the computer and press **Ctrl+A** when prompted to access the ARC utility.

2. Use the arrow keys to select "SerialSelect Utility" and press <Enter> to access the Physical Configuration submenu as shown below:



3. Select "Physical Configuration" and press <Enter> to access SAS Device Configuration submenu as shown below:


Adaptec RAID Configuration Utility 1.1-0 1416
SAS Device Configuration
SAS Port ID #0 #1 #2 #3 #4
PHY Rate..... Auto Auto Auto Auto Auto
CRC Checking..... yes yes yes yes yes
SAS Address ...500304800000000D0 0 0 0 0 0

4. Use the arrow keys to select an item. Then, press <Enter> and the arrow keys to configure the item selected.

5. To load default settings, press <F6>.

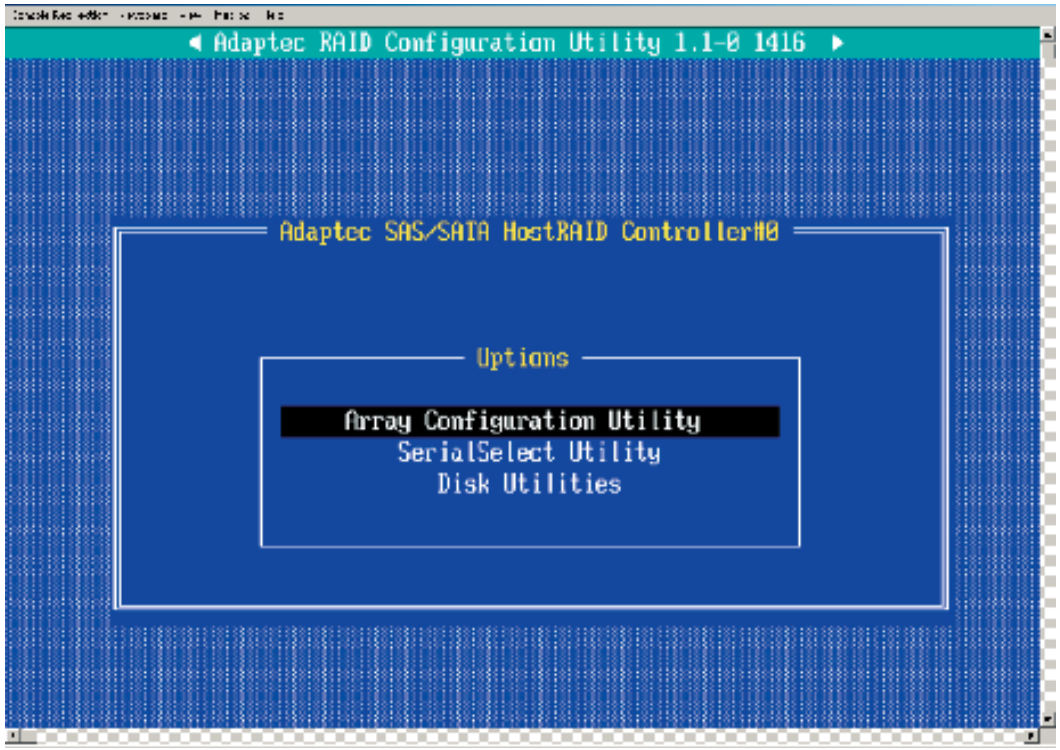
6. Press <Esc> to return to the previous menu and to exit the utility.

Using the Disk Utilities

The Disk Utilities enable you to format or verify the media of your Serial ATA hard disks.

To access the disk utilities:

1. Turn on your computer and press **Ctrl+A** when prompted to access the ARC utility (as shown in the screen below.)



2. From the ARC menu, select **Disk Utilities** from the screen as shown above and press Enter.

3. When the submenu appears, select the desired disk and press **Enter**

The following options are available:

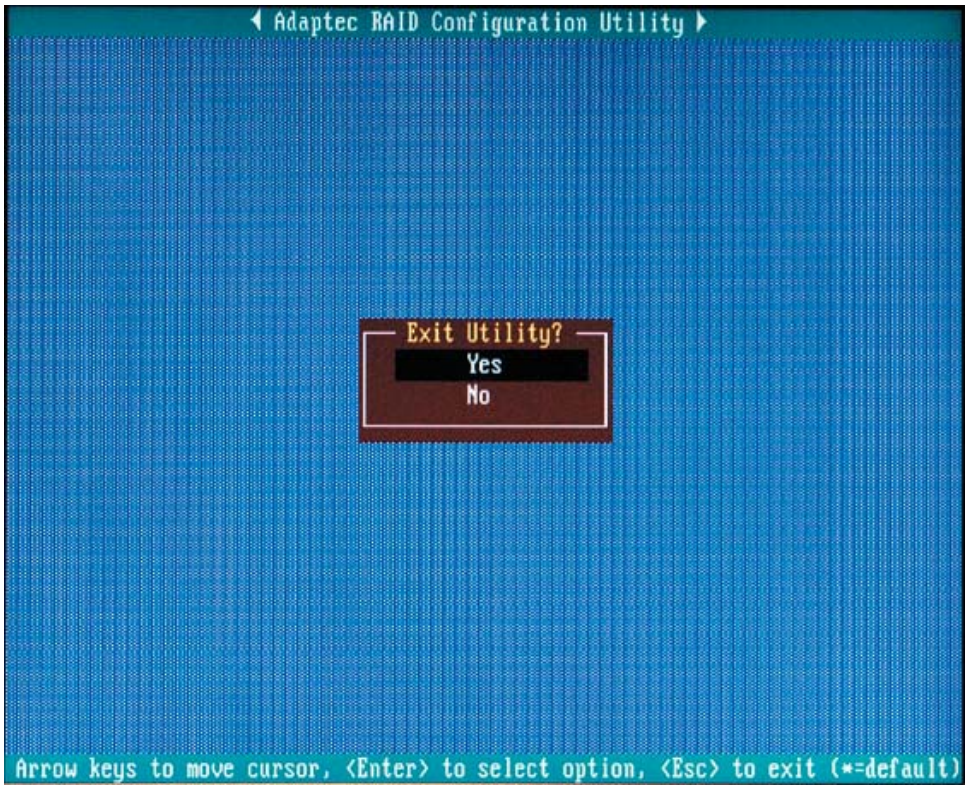
1. **Format Disk**—Simulates a low-level format of the hard drive by writing zeros to the entire disk. **Note:** Serial ATA drives are low-level formatted at the factory and do not need to be low-level formatted again. **Caution:** Formatting disk erases all data on the drive. Be sure to back up your data before performing this operation.)

2. Verify Disk Media—Scans the media of a disk drive for defects.

To Exit Adaptec RAID Configuration Utility

1. Once you have completed RAID array configurations, press **ESC** to exit. The following screen will appear.

2. Press **Yes** to exit the Utility.



For more information regarding Adaptec RAID Utility, please refer to Adaptec's User's Guide in the CD included in your shipping package. You can also download a copy of Adaptec User's Guide from our web site at: www.supermicro.com.)

B-2 Installing the 6300ESB/SAS Driver and the OS

a. Insert Supermicro's bootable CD that came with the package into the CD Drive during the system reboot, and the screen:"Super Micro Driver Diskette Maker" will appear.

b. From the list displayed on the screen, choose the item: "Intel 6300 ESB/ICH5R Driver by 3rd Party (Adaptec)" or "SAS" and press <ENTER>.

c. From the next screen displayed, choose the OS driver you want to install and press <Enter>.

d. Insert a formatted diskette into drive A: and press <Enter> as prompted.

e. Exit the program after the process is completed. Then, reboot the system.

f. Insert Microsoft Windows OS Setup CD in the CD Driver, and the system will start to boot up from CD.

g. Press the <F6> key when the message-"Press F6 if you need to install a third party SCSI or RAID driver" displays.

h. When the Windows OS Setup screen appears, press "S" to specify additional device(s).

i. Insert the driver diskette-"Adaptec Embedded Serial ATA Raid Controller Driver" into Drive A: and press the <Enter> key.

j. Choose Adaptec Embedded Host Serial ATA Raid Controller from the list indicated in the Windows OS Setup Screen, and press the <Enter> key.

k. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

l. From the Windows OS Setup screen, press the <Enter> key. The OS Setup will automatically load all device files, and, then, continue the Windows OS installation.

m. After Windows OS Installation is completed, the system will automatically reboot.

B-3 Installing Other Software Programs and Drivers

A. Installing Drivers other than Adaptec Embedded Serial ATA RAID Controller Driver

After you've installed Windows Operating System, a screen as shown below will appear. You are ready to install software programs and drivers that have not yet been installed. To install these software programs and drivers, click the icons to the right of these items.

Driver/Tool Installation Display Screen

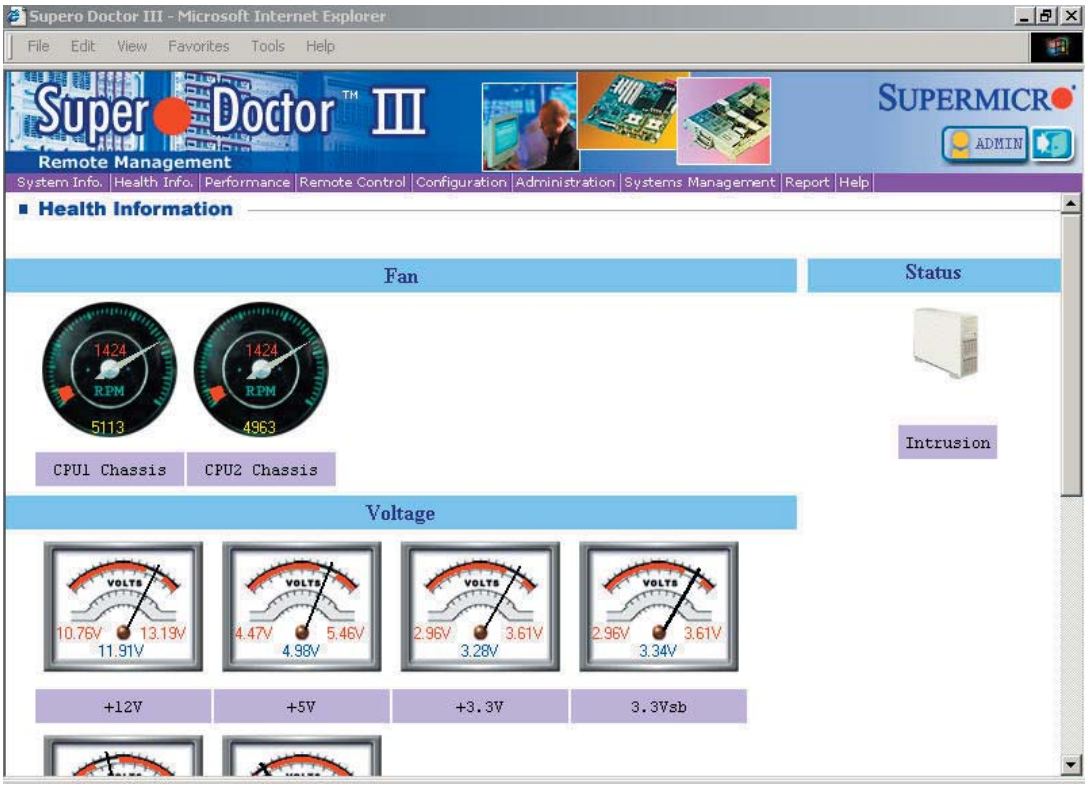
Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on the list.** You should install everything here except for the Supero Doctor utility, Intel LDCM and the LAN/SCSI driver diskettes, which are optional. The bottom icon with a CD on it allows you to view the entire contents of the CD.

Please refer to the Adaptec User's Guide for the installation of Adaptec's Serial ATA RAID Controller Driver. Adaptec's User's Guide is included in the CD. You can also download a copy of the user's guide from our web site.

Supero Doctor III

The Supero Doctor III program is a Web base management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called SD III Client. The Supero Doctor III program included on the CDROM that came with your motherboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the Supero Doctor III interface.

Supero Doctor III Interface Display Screen-I (Health Information)



Supero Doctor III Interface Display Screen-II (Remote Control)

Supero Doctor III - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Super Doctor III
Remote Management
SUPERMICRO
ADMIN
System Info. Health Info. Performance Remote Control Configuration Administration Systems Management Report Help
Remote Control
Graceful Power Control
Open Console
Power Control
Enter
Comm.
Graceful power control
Supero Doctor III allows a user to inform the OS to reboot or shut down within a specified time (the default is 30 seconds). Before the system reboots or shuts down, it's allowed to cancel the action.
Requirements
Keep Supero SD3Service Daemon running at all times on this system.
Provide TCP/IP connectivity.
Power control

Notes: 1. SD III Software Revision 1.0 can be downloaded from our Web site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download SDIII User's Guide at: http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf. For Linux, we will still recommend Supero Doctor II. 2. For detailed information on Adaptec's SCSI SATA RAID Utility, please refer to the CDs that came with your motherboard.

Appendix D

System Specifications

Processors

Single or dual Intel® Xeon™ 604-pin processors to 3.60 GHz at a front side (system) bus speed of 800 MHz.

Note: Please refer to our web site for a complete listing of supported processors.

Chipset

Intel E7520 chipset

BIOS

8 Mb Phoenix® Flash ROM

Memory Capacity

Eight 240-pin DIMM sockets supporting up to 16 GB of DDR2-400 SDRAM

Note: Dual channel memory - requires memory to be installed two modules at a time. See the memory section in Chapter 5 for details.

Serial Attached SCSI/Serial ATA Controller

• Adaptec 9410W controller for 4-port SAS/SATA (RAID 0,1,10 and JBOD supported)

• Intel ICH5R on-chip controller for 2-port Serial ATA (RAID 0,1 and JBOD supported)

SAS/SATA Drive Bays

Four (4) hot-swap drive bays to house four (4) standard SAS/SATA drives

Peripheral Drive Bays

One (1) slim 3.5" floppy drive

One (1) slim CD-ROM drive

Expansion Slots (provided with included riser cards)

One (1) 64-bit 133 MHz standard size PCI-X slot and one (1) 64-bit 66 MHz low profile PCI-X slot (with CSE-RR1U-X and CSE-RR1U-XLP riser cards)

An additional two riser cards are available as an option to support add-on cards in the SXB-E1 and SXB-E2 x8 (PCI-Express) slots (CSE-RR1U-EL and CSE-RR1U-ELP).

Motherboard

Model: X6DHR-3G2 (Extended ATX form factor)
Dimensions: 12 x 13.05 in (305 x 332 mm)

Chassis

Model: SC813T-500 Form Factor: 1U rackmount
Dimensions: (WxHxD) 17.2 x 1.7 x 25.6 in. (437 x 44 x 650 mm)

Weight

Gross (Bare Bone): 38 lbs. (17.3 kg.)

System Cooling

Two (2) 10-cm blower fans

System Input Requirements

AC Input Voltage: 100-240V AC auto-range
Rated Input Current: 10A (115V) to 5A (230V)
Rated Input Frequency: 50 to 60 Hz

Power Supply

Rated Output Power: 500W (Model# SP502-1S, Part# PWS-048)
Rated Output Voltages: +3.3V (21A), +5V (30A), +12V (39A), +5Vsb (2A)

BTU Rating

2750 BTUs/hr (for rated output power of 500W)

Operating Environment

Operating Temperature: 10º to 35º C (50º to 95º F)
Non-operating Temperature: -40º to 70º C (-40º to 158º F)
Operating Relative Humidity: 8% to 90% (non-condensing)
Non-operating Relative Humidity: 5 to 95% (non-condensing)

Regulatory Compliance

Electromagnetic Emissions:
FCC Class B, EN 55022 Class B, EN 61000-3-2/-3-3, CISPR 22 Class B

Electromagnetic Immunity:
EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4,
EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety:
EN 60950/IEC 60950-Compliant, UL Listed (USA), CUL Listed (Canada), TUV Certified (Germany), CE Marking (Europe)

Notes